

where the soluble salts are not carried away immediately in solution, it concentrates in the oxidized parts of the veins as vanadinite, descloizite, and related minerals. The world's largest known reserves are in the form of patronite in asphaltite in Peru, but in the United States the largest reserves are in small irregular deposits in soft

fine-grained sandstone, between the grains of which are roscoelite, carnotite, and similar vanadium minerals. These deposits are in an extensive area in western and south-western Colorado and portions of the adjoining states. The only authenticated vanadium occurrences in Washington are in the oxidized zone of copper deposits.

OCCURRENCES

The map showing the numbered vanadium occurrences is plate 23, on page 59 in volume 2.

CHELAN COUNTY

Dryden

Loc: 12 to 15 mi. from Dryden. **Ore:** Vanadium. **Deposit:** This unverified report is of doubtful authenticity. **Ref:** 40, p. 37.

CLARK COUNTY

Sunset Falls (1)

Loc: Vicinity of Sunset Falls C. C. C. Camp in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 24, (4-4E). **Access:** Road. **Ore:** Reportedly vanadium. Very doubtful. **Deposit:** Country rock of andesite, agglomerate, and flow breccia. **Ref:** 158.

KITTITAS COUNTY

Big Z

(see Zerwekh under gold)

Zerwekh (1)

(see under gold)

SKAGIT COUNTY

Scott (1)

Loc: 9 mi. N. of Hamilton. **Prop:** 5 claims. **Owner:** Scott Bros. (1936). **Ore:** Vanadium. Doubtful occurrence. **Ref:** 158.

SKAMANIA COUNTY

Last Chance (2)

(see under copper)

Rainbow (3)

Loc: Center S $\frac{1}{2}$ S $\frac{1}{2}$ sec. 32, (3-5E), on ridge separating the W. Fk. of Washougal R. from Wild Boy Cr. **Access:** 14 mi. by road from Cape Horn. **Owner:** Owned by Fred Wark and optioned by John Hogg, Vancouver, Wash. (1942). **Ore:** Re-

portedly vanadium, lead, copper, gold, silver, uranium. Presence of uranium is very doubtful. **Gangue:** Quartz, some amethystine. **Deposit:** Quartz vein with yellow phosphate mineral along cracks. **Dev:** 2 shafts. **Assays:** As much as 5% vanadium reported. **Ref:** 58, p. 56. 104, vol. 14, no. 4, p. 40. 158.

Skamania (1)

(see under copper)

SNOHOMISH COUNTY

Clara Thompson

(see Jasperson under gold)

Commonwealth

(see Jasperson under gold)

Good Hope (2)

(see under gold)

Index

Loc: Index dist. **Owner:** C. S. Armstrong. **Ore:** Vanadium. **Assays:** 98% "vanadium" reported. Doubtful. **Ref:** 14, p. 19. 40, p. 37.

Jasperson (3)

(see under gold)

McCombs

(see Jasperson under gold)

Wayside (1)

(see under copper)

Webster

(see Jasperson under gold)

WHATCOM COUNTY

Smith (1)

Loc: Sec. 23, (40-4E). **Prop:** 80 acres. **Owner:** Lowell F. Smith, Sumas, Wash. (1936). **Ore:** Vanadium reported. Doubtful. **Ref:** 158.

ZINC

Properties—Zinc is a bluish-white lustrous metal that is easily fusible and fairly hard. It is brittle at ordinary temperatures, but when annealed it becomes ductile and malleable and does not become brittle upon cooling, but when reheated to 200° it is again brittle. It is a fair conductor of heat and electricity. Zinc is only moderately resistant to corrosion, but it is better than iron in this respect, and because of this and the very great affinity that zinc and iron have for each other, it is used to coat and protect iron from atmospheric corrosion. The electrochemical properties of zinc account for its use in batteries, and its chemical properties for its use in photoengraver's sheets. Zinc is bivalent in all its compounds. Other properties are shown in the table on page 12.

Uses—The galvanizing industry has long been the largest consumer of zinc, accounting for more than 45 percent of the 1950 consumption. Galvanizing is the placing of a thin coating of zinc, usually on iron or steel sheet, wire, tubes, pipe, fittings, and other shapes. Zinc-base alloys for die castings used nearly 30 percent of the available zinc in 1950, followed by brass (14 percent) for sheet, strip, plate, rod, wire, tubes, castings, and other copper-base products. Rolled zinc accounted for about 7 percent of the consumption; zinc oxide, 2 percent; and 1 percent, for other uses such as wet batteries, desilvering of lead, in light-metal alloys, and chemicals. Zinc oxide and other chemicals are used as pigments, as a filler in rubber, in glass manufacture, in medicines, and in many other minor uses.

Production—Zinc is mined in ten western states, seven central states, and four eastern states, but is smelted or refined in only four states. In the west there are custom zinc smelters in Idaho at Kellogg, in Montana at Anaconda and Butte, and in British Columbia at Trail. Zinc output in the Tri-State district has dropped from 55 percent of the total United States production in 1926 to only 13 percent in 1950, and western production has had a corresponding increase to 59 percent in 1950.

Zinc occurrences have been reported in 18 of Washington's 39 counties, but production has been mainly from Okanogan, Ferry, Stevens, Pend Oreille, and Chelan Counties, the last 3 counties having accounted for almost all the Washington production in recent years. Among the zinc mines in the United States, the Pend Oreille mine in Pend Oreille County ranked 35th in production in 1949, the Holden mine in Chelan County was 50th, and the Grandview mine in Pend Oreille County was 58th. The following year the Grandview was the leading producer in Washington and ranked 25th nationally. In 1952 the state's leading zinc producers in order of output were the Pend Oreille, Grandview, Deep Creek, and Holden mines. The Van Stone mine in Stevens County began production late that year and was one of the leading producers in 1953. Among the zinc districts in the United States in 1950, the Metaline district ranked 14th in output; the Lake Chelan district, 28th; and the Northport, 33rd.

The first recorded production of zinc in Washington was from the Oriole mine in the Metaline district in 1911. There appears to have been no further production until 1915, but since that time output has been continuous (except for 1919) to the present. Total production in the state through 1952 has been 228,091 short tons of metal, valued at \$49,243,324, which is 22.7 percent of the total value of all metals produced in the state during the same period. The record annual output was in 1953, when 32,890 short tons, valued at \$7,170,020, was produced. This was more than triple the zinc output in the state 4 years earlier.

Prices—Zinc prices have fluctuated widely both over long-term and short-term periods, and market quotations change frequently. The annual average price from 1900 through 1914 was between 4 and 5 cents per pound but jumped to 14 cents in 1915 and dropped back to 4½ cents by 1921. It had risen to nearly 8 cents by 1924 but dropped to an all-time low of about 3 cents in 1932. This annual average price rose to 6½ cents by 1937 but dropped to 4½ cents the following year and climbed again by 1942 to 8¼ cents, where it remained through the war years until 1946. After Government controls were lifted the annual average price rose to 18.2 cents per pound by 1951, only to drop back again to 16.6 cents the following year and to 11.1 cents in 1953. Early in 1954 the price was 9.25 cents, but by June 1955 it was back up to 12.75 cents. The

1949 high quotation of 17½ cents and low of 9 cents illustrate the extreme fluctuations even in "normal" times, as do the 1952 prices, which included a low of 12½ cents and an all-time high of 19½ cents.

Ore minerals—There are no authenticated occurrences of native zinc, but the element has been reported in almost 150 minerals in the Franklin Furnace district of New Jersey, alone. However, only 6 minerals are common sources of the metal, and by far the most important of these is the sulfide, sphalerite, ZnS , containing 67.0 percent zinc. The others are the carbonate, smithsonite, ZnCO_3 , containing 52.0 percent zinc; the hydrous silicate, hemimorphite (calamine), $(\text{ZnOH})_2\text{SiO}_3$, containing 54.2 percent zinc; the oxide, zincite, ZnO , containing 80.3 percent zinc; the silicate, willemite, Zn_2SiO_4 , containing 58.5 percent zinc; and the ferrite, franklinite, $(\text{Fe,Zn,Mn})\text{O} \cdot (\text{Fe,Mn})_2\text{O}_3$, containing from 15 to 20 percent zinc. Of these minerals, the last three are important ore minerals in few, if any deposits other than those in the unique Franklin Furnace district. Of the ore minerals, only sphalerite and smithsonite have been reported in Washington, but the comparatively rare zinc basic carbonate, hydrozincite, $2\text{ZnCO}_3 \cdot 3\text{Zn}(\text{OH})_2$, occurs in the Covada district and in a few other places in the state.

Geology—Most ores of zinc are ores of lead also, although there are a few straight zinc ores and a few large copper-zinc deposits. In Washington most of the zinc comes from zinc-lead deposits, but the Holden mine produces copper-zinc ore with appreciable values in gold and very low values in silver, and in many smaller deposits zinc is associated with a variety of other minerals in complex ores. Zinc may occur as open-space fillings or replacements in veins, and as residual deposits of oxidized zinc minerals. It may also occur as massive replacement deposits of irregular shape, in which the ore minerals are disseminated in limestone or dolomite and are sometimes accompanied by pyrite and frequently by chert or other forms of low-temperature silica minerals. The disseminated replacements in some districts are near the contact of carbonate rocks with granitic rocks, but in other important zinc districts the igneous sources of the hydrothermal solutions presumably responsible for the metalization are far removed or not exposed at all.

The grade of ore mined varies from a low of about 2 percent combined lead and zinc to a high of 8 percent or more. In 1949 the recovery from western states ore averaged 4.86 percent zinc and 3.20 percent lead, whereas the recovery from the generally larger and less complex ore deposits in the Tri-State district averaged only 1.66 percent zinc and 0.69 percent lead. The 1952 production from one large mine in the Metaline district in Washington averaged 2.29 percent zinc and 1.39 percent lead.

OCCURRENCES

The maps showing the numbered zinc occurrences are plates 24, 25, and 26, on pages 61, 63, and 65 in volume 2.

CHELAN COUNTY

Billy Jack (1)

(see under lead)

Bismarck (13)

Loc: NE¼ sec. 12, (31-18E), between Meadow and Cascade Creeks. **Prop:** 3 claims. **Owner:** Roger Hale and Albert Mitchell (1947). **Ore:** Zinc, copper. **Ore min:** Arsenopyrite, pyrite, sphalerite, reportedly copper sulfides. **Deposit:** A 2-in. to 1-ft. quartz vein in granite gneiss. Sulfides constitute only 1% of the vein. **Dev:** 120-ft. adit. **Ref:** 63, p. 81. 67, p. 31. 158.

Black Warrior (5)

(see under copper)

Cascade Consolidated (6)

(see under silver)

Clagstone (2)

(see under lead)

Doubtful (7)

(see under lead)

Ellen

(see Van Epps under antimony)

Galena (8)

(see under lead)

Holden (16)

(see under copper)

Horseshoe Basin (9)

(see under lead)

Howe Sound

(see Holden under copper)

Irene

(see Holden under copper)

Keefer Brothers (17)

(see under molybdenum)

King Solomon (12)

(see under copper)

King Solomon (Van Epps)

(see Van Epps under antimony)

Kingman

(see Galena under lead)

Logan (4)

(see under lead)

Orphan Boy (14)

(see under silver)

Panama No. 2 (10)

(see under lead)

Red Mountain (18)

(see under copper)

Royal

(see Red Mountain under copper)

Silver Jack (3)

(see under lead)

Silver Trail (15)

(see under copper)

Snook and Ellen

(see Van Epps under antimony)

Spokane Boy and Girl (11)

(see under copper)

Tiger

(see Galena under lead)

Van Epps (19)

(see under antimony)

CLALLAM COUNTY

Angeles Star (Winter, Gregory-Savage) (1)

Loc: Sec. 6, (29-6W), on Cowan Cr., a tributary to Little R. **Elev:** 1,490 to 1,810 ft. **Access:** 6 mi. by road and 3½ mi. by trail from railroad at Port Angeles. **Prop:** 8 claims. **Owner:** Byron Winter, Tacoma, Wash. (1942). **Ore:** Zinc, gold, copper. **Ore min:** Sphalerite, chalcopryite, pyrite. **Gangue:** Quartz. **Deposit:** Two 6-in. veins and a 36-in. vein reported. **Dev:** 166-ft. adit, 225-ft. adit, 200-ft. adit. **Assays:** Tr. to 0.02 oz. Au, 0.90% to 8.91% Zn. **Ref:** 158.

Gregory-Savage

(see Angeles Star)

Savage

(see Angeles Star)

Winter

(see Angeles Star)

CLARK COUNTY

Silver Star (1)

(see under copper)

COWLITZ COUNTY

Green Mountain (1)

(see under gold)

FERRY COUNTY

Abe Lincoln (54)

(see under copper)

Addie B (56)

(see under copper)

Addison (61)

(see under copper)

Advance (28)

(see under silver)

American Granby

(see under copper)

Apex

(see Big Chief under lead)

Apollo

(see California under gold)

Big Chief (29)

(see under lead)

Big Lake (9)

(see under lead)

Black Hawk (30)
(see under lead)

Blevins
(see Meadow Creek under copper)

Blue Mountain
(see Jennie under gold)

Cabin
(see Advance under silver)

California (7)
(see under gold)

Chief
(see Big Chief under lead)

Chief Barnaby (8)
(see under silver)

Cold Spring (12)
(see under lead)

Comstock (1)
(see under copper)

Consolidated Mines and Smelting Co., Ltd.
(see under copper)

Copper Prince
(see under silver)

Cougar (64)
(see under copper)

Cuba
(see Big Lake under lead)

Curlew
(see under lead)

Dan Patch (13)
(see under silver)

Dill (17)
(see under lead)

Drummond (31)
(see under lead)

Gold Twenty (10)
(see under gold)

Golden Cord (62)
(see under silver)

Goldsmith (11)
(see under lead)

Great Northern (52)
(see under silver)

Great Scott (14)
(see under lead)

Henneway (49)
(see under lead)

Humboldt (65)
(see under copper)

Illinois (66)
(see under copper)

Iron Creek
(see Shamrock under nickel)

J. H. E. (15)
(see under lead)

Jennie (5)
(see under gold)

Jumper (67)
(see under copper)

Kentucky Bell (32)
(see under lead)

Keystone (18)
(see under silver)

King Richard
(see Meadow Creek under copper)

La Fleur
(see Comstock under copper)

Lancaster (2)
(see under copper)

Laurier
(see Talisman under copper)

Legal Tender (33)
(see under lead)

Lone Pine (34)
(see under lead)

Longstreet (35)
(see under silver)

McJunkin (48)
(see under silver)

Meadow Creek (55)
(see under silver)

Meteor (19)
(see under silver)

Mono (53)
Loc: Near center S½ sec. 13, (30-32E), Keller dist. **Ore:** Zinc, silver, lead. **Ore min:** Sphalerite, galena, pyrite. **Gangue:** Granite. **Deposit:** Shear zone in granite 6 ft. or more wide. Outcrop is a heavy gossan beneath which are bunches of pyrite as large as 3 ft. in dia. Also veinlets up to 2 in. wide of solid sulfides. **Dev:** 30-ft. adit. **Assays:** Sample from one of veinlets assayed 23.7% Zn, 1.4% Pb, 5.44 oz. Ag. **Ref:** 46, p. 144. 122, p. 127.

Montana (20)
(see under silver)

New York (21)
(see under lead)

Nez Perce (42)
(see under lead)

North Star (57)
(see under lead)

Ophir (58)
(see under lead)

Oregon
(see Illinois under copper)

Pacific Mutual
(see Addison under copper)

Panama (3)
(see under gold)

Patterson
(see Jennie under gold)

Paulsen (43)
(see under lead)

Plymouth Rock (39)
(see under lead)

Polepick (68)
(see under copper)

Poor Man's Hope (63)
(see under lead)

Prescott (22)
(see under lead)

Rattlesnake (44)
(see under lead)

Ren Rice (16)
(see under lead)

Renner Lake (6)
Loc: Sec. 6, (37-37E), Boyds area. **Ore:** Zinc. **Prod:** 1925.
Ref: 97, 1925, p. 558.

Robert E. Lee (36)
(see under antimony)

Romulus (23)
(see under lead)

Rover Bonanza (59)
(see under silver)

Royal Ann (37)
(see under lead)

San Poil Monitor
(see Meadow Creek under copper)

Several (24)
(see under lead)

Shamrock (50)
(see under nickel)

Silver Bell (45)
(see under lead)

Silver Leaf (46)
(see under silver)

Silver Plume (40)
(see under lead)

Silver Queen (41)
(see under lead)

Silver Spar (38)
(see under lead)

Stotesbury (51)
Loc: NW¼ sec. 28, (30-35E), Keller dist. **Prop:** 1 claim.
Owner: Robert Stotesbury (1913). **Ore:** Zinc. **Ore min:** Sphalerite, pyrite. **Gangue:** Iron-stained quartz. **Deposit:** Cellular quartz vein 30 in. wide in a dike rich in hornblende. Vein carries small percentages of pyrite and sphalerite. **Ref:** 46, p. 158. 122, p. 140.

Stray Dog (25)
(see under silver)

Summit (60)
Loc: Near SW. cor. sec. 31, (30-34E), Keller dist. **Ore:** Zinc, silver, copper, lead. **Ore min:** Sphalerite with some galena, pyrite, chalcopryrite, specularite. **Gangue:** Quartz, epidote. **Deposit:** Pendant of argillite and quartzite cut by small dikes of pegmatite. Samples on dump of shaft indicate a mineralized quartz vein at least 1 ft. wide. **Dev:** 2 shafts. **Assays:** Sample from dump somewhat richer than av. assayed 14.2% Zn, 5.4% Cu, tr. Au, 17.7 oz. Ag. Small pile of selected ore contained est. 20% in aggregate sulfides. **Ref:** 46, p. 153. 122, p. 131.

Talisman (4)
(see under copper)

Vernie (26)
(see under lead)

Walla Walla
(see under copper)

White Rose (27)
(see under lead)

Yellowstone (47)
(see under lead)

KING COUNTY

Aces Up (18)
(see under silver)

Anderson (3)
(see under iron)

Baring
(see Anderson under iron)

Bear Basin (10)
(see under silver)

Cleopatra (11)
(see under silver)

Coney Basin (13)
(see under gold)

Copper Plate
(see Seattle-Cascade under silver)

Dawson (14)
(see under lead)

Dutch Miller (21)
(see under copper)

Goat Mountain (20)
(see under lead)

Guye (22)
(see under iron)

Jack Pot (19)
Loc: SW¼ sec. 27 and S½ sec. 28, (25-10E), on W. side of Cougar Cr. **Elev:** 4,740 ft. **Access:** Trail from Lennox Cr. and 28 mi. by road to railroad at North Bend. **Prop:** 8 unpatented claims and a millsite. **Owner:** Robert Prufer, North Bend, Wash. (1947—). **Ore:** Zinc, lead, gold, silver, copper, tungsten. **Ore min:** Scheelite, pyrite, chalcopryrite, sphalerite. **Gangue:** Quartz, tourmaline. **Deposit:** Discontinuous aligned mineralized fractures. Best showing is a lenticular vein 2 ft. wide at top of a cliff and 10 ft. wide 50 ft. lower. **Assays:** 7 samples av. 0.03 oz. Au, 0.57 oz. Ag, 5.67% Zn, 0.89% Pb. **Ref:** 11-A, pp. 204-207. 158.

King and Kinney (15)
(see under copper)

Kinney
(see King and Kinney under copper)

Langer (7A)
Loc: Sec. 17, (25-10E), on N. side of Lennox Cr. about 1½ mi. above its mouth, Buena Vista dist. **Access:** Road. **Ore:** Zinc, copper. **Ore min:** Sphalerite, chalcopryrite, pyrrhotite. **Deposit:** 4-in. seam of sphalerite with some chalcopryrite and pyrrhotite in metasediments near granodiorite contact. **Dev:** 20-ft. adit. **Ref:** 11-A, pp. 231-232.

Last Chance (8)
(see under gold)

Lennox (7)
(see under gold)

Mohawk (4)
(see under lead)

Mona
(see Mono under copper)

Mono (9)
(see under copper)

Mt. Logan
(see Guye under iron)

Mount Phelps (5)
Loc: Secs. 5, 6, 7, and 8, (25-10E), on S. slope of Mt. Phelps, Buena Vista dist. **Elev:** 1,900 to 2,400 ft. **Access:** Reached from North Bend by 24 mi. of graveled road. **Prop:** 50 unpatented claims. **Owner:** Priestly Mining & Milling Co. (1947). **Ore:** Zinc, copper, also gold, silver, and lead reported. **Ore min:** Magnetite, pyrite, sphalerite, chalcoppyrite, arsenopyrite. **Gangue:** Epidote. **Deposit:** Dark-colored dike rock in granite is sparsely mineralized along joints. **Dev:** 60-ft. adit and several open cuts mostly in barren rock. **Assays:** Reported to be uniformly about \$5.00 Au, Ag, Pb, Zn. **Ref:** 158.

Philippi Lake (6)
(see under lead)

Ryland
Loc: Secs. 8 and 9, (25-10E). **Prop:** 6 patented claims. **Owner:** Dwight W. Johnson, Kent, Wash. (1956—). **Rushing Milling & Mining Co.** (1903). **Ore:** Zinc. **Dev:** 3 adits. **Ref:** 158.

Salmon Creek (1)
(see under gold)

Seattle-Cascade (16)
(see under silver)

Silver Dollar and Copper Plate
(see Seattle-Cascade under silver)

Silver Star (12)
(see under silver)

Sockless Jerry
(see Last Chance under gold)

Summit
(see Guye under iron)

Three S Gulch (17)
Loc: NW¼ sec. 16, (25-11E), Miller R. dist. **Access:** Road. **Owner:** Alexander Mining Co., Seattle, Wash. (1952—). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena, chalcoppyrite. **Deposit:** Mineralized shear zone in granodiorite. Vein is 6 to 9 in. thick. **Ref:** 133-A, p. 32.

Treasury Lead (2)
(see under lead)

Triple S
(see Seattle-Cascade under silver)

KITTITAS COUNTY

Camp Creek (2)
(see under silver)

Esther and Louisa (1)
(see under silver)

LEWIS COUNTY

Eagle Peak (1)
(see under copper)

Mineral Creek (2)

Loc: Lease lots 2 and 4, SW¼ sec. 30, (14-6E), on Mineral Cr. **Access:** 5 mi. SE. of Mineral by logging railroad. **Owner:** State land leased by John M. Allen, Tacoma, Wash. (1949). **Ore:** Zinc, lead, silver, arsenic. **Ore min:** Sphalerite, galena, realgar. **Assays:** Sample said to have been taken across a 300-ft. face assayed 3.80% Zn, 3.60% Pb, 2.56 oz. Ag. **Prod:** Reportedly 1,000 tons of arsenic ore in 1903, some production in 1904 and 1905. **Ref:** 130, p. 60. 141, p. 54. 158.

LINCOLN COUNTY

Crystal (1)
(see under lead)

Fouress (Pitney Butte) (2)

Loc: SW¼NW¼ sec. 32, (28-37E), in steep valley on NW. side of Pitney Butte. **Elev:** 1,900 ft. **Access:** Road, 20 mi. to Davenport. **Prop:** 5 claims: Lost Stake, Valley, Silver Butte, Hill Top, Lakeview. **Owner:** Fouress Mines, Inc., Olympia, Wash. (1950—). **Ore:** Silver, zinc, lead, gold, copper. **Ore min:** Sphalerite, ruby silver, native silver. **Deposit:** A discontinuous quartz vein 1 to 4 ft. wide and traceable for 100 ft. is enclosed in granite. Vein shows mineralization for about 40 ft. **Dev:** 500-ft. adit, three 100-ft. shafts. **Assays:** Typical analysis said to be 7% Zn, 1% Pb, 0.6% Cu, 1% Sb, 0.05% As, 0.87 oz. Ag, 0.04 oz. Au. **Ref:** 133, p. 33. 158.

Pitney Butte
(see Fouress)

Valley View (3)

Loc: Sec. 32, (28-37E). **Elev:** 2,400 ft. **Access:** 19 mi. from Davenport by road. **Prop:** 1 claim: Valley View (formerly J. B.). Probably part of the Fouress property. **Owner:** D. V. Smith, H. M. Smith, C. J. Sprowls (1941). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena, pyrite. **Deposit:** Granite cut by quartz veins 1½ to 2 ft. wide with scattered bunches of sulfides. **Dev:** 2 adits. Lower adit 100 ft. long, the other adit 100 ft. higher is 80 ft. long and has a 60-ft. drift. A 50-ft. shaft at portal of upper adit. **Assays:** Low grade. **Ref:** 158.

MASON COUNTY

Black and White (1)
(see under copper)

OKANOGAN COUNTY

Alder (14)
(see under gold)

American Flag (8)
(see under gold)

American Flag (66)
(see under copper)

Anchor (87)
(see under silver)

Anna (84)
(see under silver)

Antimony Queen (16)
(see under antimony)

Apache (88)
(see under silver)

Apex (60)
(see under copper)

Arizona
(see Horn Silver under silver)

- Arlington (56)**
(see under silver)
- Atkins (67)**
(see under lead)
- Ben Harrison**
(see Apex under copper)
- Billy Goat (1)**
(see under copper)
- Boundary**
(see Wolframite under tungsten)
- Bunker Hill**
(see Silver King under lead)
- Butcher Boy (62)**
(see under gold)
- Caaba**
(see Kaaba under lead)
- Cabin (89)**
(see under lead)
- California (21)**
(see under copper)
- Carr (2)**
(see under copper)
- Castle Creek (68)**
(see under lead)
- Catherine (22)**
(see under silver)
- Central (Trinidad) (39)**
(see under silver)
- Central (American Flag)**
(see American Flag under gold)
- Chief Sunshine (40)**
(see under silver)
- Cliff (69)**
Loc: SE¼NE¼ sec. 11, (33-31E), Park City dist. **Ore:** Zinc. **Ore min:** Sphalerite, pyrite. **Gangue:** Calcite. **Deposit:** Brecciated zone in argillite, breccia cemented by calcite and sparsely mineralized with sphalerite and pyrite. **Dev:** Short adits and pits. **Ref:** 46, p. 181. 122, pp. 96-97.
- Climax (6)**
(see under copper)
- Continental**
(see Mazama Queen under gold)
- Controller (92)**
(see under copper)
- Copper King (42)**
(see under lead)
- Copper World Extension (34)**
(see under copper)
- Cornwall (4)**
(see under lead)
- Crystal Butte (64)**
(see under gold)
- Daisy (5)**
(see under gold)
- Dixie Queen**
(see Antimony Queen under antimony)
- Double Eagle**
(see Dry Bone under lead)
- Dry Bone**
(see under lead)
- Duke of Windsor**
(see Dry Bone under lead)
- Esther (43)**
(see under lead)
- Eureka (80)**
Loc: Sec. 9, (31-30E), Nespelem dist. **Access:** 33 mi. from railroad at Omak. **Ore:** Zinc. **Ore min:** Sphalerite, magnetite, specularite. **Deposit:** Discontinuous lenses 2 to 6 in. wide in zone 21 ft. wide. Contact deposit in metamorphic rock surrounded by granite. Irregularly distributed small high-grade lenses. **Ref:** 158.
- Evening (86)**
(see under silver)
- Ferris R. Ford**
(see Wolframite under tungsten)
- First Thought (53)**
(see under silver)
- Four Metals (23)**
(see under lead)
- Gold Crown**
(see Spokane under gold)
- Gold Hill (37)**
(see under gold)
- Golden Zone (20)**
(see under gold)
- Gould & Curry (90)**
(see under lead)
- Great Metals**
(see Anchor under silver)
- Great Western (81)**
(see under lead)
- Grubscher**
(see Gubser under lead)
- Gubser (44)**
(see under lead)
- Hanks (3)**
(see under copper)
- Hargrove**
(see Silver King under lead)
- Hatfield**
(see Wolframite under tungsten)
- Hercules (77)**
(see under lead)
- Hiawatha (33)**
(see under gold)
- Hidden Treasure (Highland) (17)**
(see under gold)
- Highland (18)**
(see under gold)
- Highland Light**
(see Highland under gold)
- Horn Silver (29)**
(see under silver)

Hudnut (Hudnutt) (85)

Loc: Near center sec. 17, (31-30E), on W. shoulder of Multnomah Hill, Nespelem dist. **Access:** 5 mi. by road W. of Nespelem. **Prop:** 1 claim. **Owner:** F. O. Hudnut (t) (1913). **Ore:** Zinc, molybdenum, copper, gold, silver. **Ore min:** Sphalerite, molybdenite, chalcopryrite, pyrite. **Gangue:** Quartz, fluorite. **Deposit:** 18-in. quartz vein in rusty sericitized granite (containing sphalerite and pyrite). Small amounts of pyrite, chalcopryrite, molybdenite, sphalerite, and fluorite in the wall rock. **Dev:** Open cuts and pits. **Ref:** 46, p. 194. 58, p. 31. 122, pp. 79-80.

Independent (78)

(see under lead)

Iron Cap and Snow Cap (9)

(see under gold)

Iron Dike (76)

Loc: Sec. 4, (33-31E). **Access:** Adjoins the site of Park City on the SE. **Owner:** John Redmond (1913). **Ore:** Zinc, copper, gold, silver. **Ore min:** Sphalerite, pyrite, pyrrhotite, chalcopryrite. **Gangue:** Gabbro, quartz, calcite. **Deposit:** Mineralized gabbro dike 100 ft. wide and several hundred ft. long. Sulfides occur as bands and disseminations. **Dev:** 2 short crosscuts and a few pits. **Assays:** Av. sample across 55 ft. assayed 3.2% Zn, 0.3% Cu, tr. Au, tr. Ag. Sample from face of richer adit assayed 6% Zn, 0.05% Cu, tr. Au. **Ref:** 46, pp. 186-187. 122, pp. 97-98.

Iron Mask

(see Copper World Extension under copper)

Josie

(see Hiawatha under gold)

Jupiter

(see Tip Top under copper)

Kaaba (24)

(see under lead)

Kaaba-Texas

(see Kaaba under lead)

Key (45)

(see under silver)

Kimberly (32)

(see under lead)

Lady of the Lake (51)

(see under silver)

Last Chance (54)

(see under silver)

Little Chopaka (25)

(see under lead)

Lone Star (41)

(see under lead)

McGrath (26)

Loc: SE¼ sec. 14, (40-25E), ½ mi. S. of Nighthawk. **Prop:** 4 unpatented claims. **Owner:** R. W. McGrath and A. Allemandi, Nighthawk, Wash. (1934). **Deposit:** Vein 2 to 3 ft. wide. **Dev:** Several thousand ft. of adits. **Assays:** Nil to 6.25 oz. Ag, nil to 11.9% Zn. **Ref:** 158.

Malott (59)

(see under copper)

Maquae

(see under gold)

Mazama Queen (7)

(see under gold)

Mid Range (10)

(see under gold)

Mineral Hill (46)

(see under silver)

Minnie (15)

(see under gold)

Modoc (82)

(see under copper)

Mohawk

Loc: 5 mi. NW. of Nespelem. **Ore:** Zinc, silver, chromium. **Assays:** 4 samples showed: tr. to 8.4 oz. Ag, 4.4% to 14.5% Zn. One sample showed: 40.2% Fe, 2.8% Cr. **Ref:** 158.

Monitor (47)

(see under lead)

Mother Lode

(see Crystal Butte under gold)

Mountain Boy (70)

(see under lead)

Nevada (55)

(see under silver)

New Deal

(see Antimony Queen under antimony)

Okanogan Free Gold (31)

(see under gold)

Olentangy (61)

(see under gold)

Oriental & Central

(see American Flag under gold)

Owasco

(see Okanogan Free Gold under gold)

Peacock (52)

(see under silver)

Pinnacle (35)

(see under gold)

Poorman (71)

Loc: SE¼NE¼ sec. 11, (33-31E), Park City dist. **Ore:** Zinc, lead. **Ore min:** Pyrite, galena, sphalerite. **Deposit:** 6- to 18-in. quartz vein in argillite sparsely mineralized. **Dev:** 100-ft. adit. **Prod:** 1937. **Ref:** 46, p. 181. 122, p. 97.

Pyrargyrite

(see Ruby under silver)

Ramore (79)

(see under lead)

Rattlesnake (13)

(see under gold)

Rebecca (94)

(see under copper)

Red Bird (93)

(see under copper)

Reedy

(see Antimony Queen under antimony)

Rich Bar (30)

(see under copper)

Ruby (28)

(see under silver)

Salmon River (48)

(see under silver)

Security (36)
(see under copper)

Seven Devils
(see Mineral Hill under silver)

Sharp & Balthus (72)
Loc: NW¼ sec. 11, (33-31E). **Access:** ½ mi. N. of Park City along the road to Gold Cr. **Ore:** Zinc, lead, silver. **Ore min:** Pyrite, galena, sphalerite. **Gangue:** Quartz. **Deposit:** Bedding vein 2 ft. av. width in sheared argillite. Vein is quartz carrying small percentages of ore minerals. **Dev:** 40-ft. upper adit, lower adit. **Ref:** 46, p. 182. 58, p. 61. 122, p. 97.

Sherman (58)
(see under lead)

Silver King (49)
(see under lead)

Silver Mountain (38)
(see under silver)

Silver Seal
(see Antimony Queen under antimony)

Silver Star
(see Silver Mountain under silver)

Six Eagles
(see Little Chopaka under lead)

Snow Cap
(see Iron Cap and Snow Cap under gold)

Snowshoe (73)
(see under lead)

Sonny Boy (57)
(see under silver)

Spokane (11)
(see under gold)

Standard
(see Sherman under lead)

Star
(see Lone Star under lead)

Summit (74)
(see under lead)

Summit (27)
(see under silver)

Sunshine
(see Hidden Treasure under gold)

Sunshine Chief
(see Chief Sunshine under silver)

Tip Top (91)
(see under copper)

Tomlinson
(see under copper)

Tough Nut (50)
(see under silver)

Triangle
(see Hidden Treasure under gold)

Trinidad
(see Central under silver)

Twin Pine (83)
Loc: Secs. 4, 5, and 8, (31-30E). **Elev:** 2,550 ft. **Access:** 6 mi. NW. of Nespelem by road. **Prop:** 8 claims. **Owner:** Eugene Smith, Nespelem, Wash. (1943-1948). **Ore:** Zinc, iron,

copper, gold, silver. **Ore min:** Magnetite, sphalerite, chalcopryrite, scheelite, hematite, malachite, bornite, chalcocite, azurite, possibly molybdenite. **Gangue:** Quartz, garnet, epidote, calcite, actinolite, fluorite. **Deposit:** Roof pendant of sediments replaced and mineralized by intrusive granite. Appears to be promising zinc property. **Dev:** 350-ft. adit, two shorter adits, 5 shafts, some open cuts. **Assays:** Reportedly \$1.25 to \$90 Cu, Au, Ag. Parts of the rock consist of 25% to 80% magnetite. **Prod:** Reported to have produced. **Ref:** 158.

Twisp View (12)
(see under gold)

Wasco (75)
(see under silver)

Washington Consolidated
(see Mineral Hill under silver)

West King
(see under silver)

Whitestone (65)
(see under gold)

Wolframite (19)
(see under tungsten)

Yakima (63)
(see under copper)

PEND OREILLE COUNTY

Ace Ten Spot (78)

Loc: Sec. 29, (39-43E), Metaline dist. **Access:** Road. **Prop:** 6 unpatented claims. **Owner:** Abandoned (1941). Formerly Metaline Contact Mines. **Ore:** Zinc, lead. **Deposit:** Small showings in zinc and lead. **Dev:** 200-ft. adit, several open cuts. **Ref:** 29, pp. 39-40.

Ackerlund (99)
(see under copper)

D. Aldrich
(see Lead King under lead)

American Zinc, Lead and Smelting Co.
(see Grandview mine, Dumont, Lead Hill)

Auburn (31)
(see under lead)

Bailey-Hanson
(see Red Top under lead)

Barefoot (95)
(see under silver)

Bead Lake (100)
(see under lead)

Beaty (27)
(see under lead)

Bella May (new adit) (86)
(see also Metaline Mining & Leasing Co.)

Loc: NE¼NE¼ sec. 32, (39-43E), Metaline dist. **Access:** On road on W. side Pend Oreille R., 1½ mi. S. of Metaline Falls. **Owner:** Metaline Mining & Leasing Co., Spokane, Wash. (1952—). **Ore:** Zinc, lead, silver, cadmium. **Ore min:** Sphalerite, galena, pyrite, marcasite, unidentified uranium mineral. **Gangue:** Silicified limestone and dolomite, siderite. **Deposit:** At least 2 replacement bodies in hydrothermally altered Metaline limestone about 150 ft. below the Ledbetter slate. Uranium mineralization appears to be not-related to the zinc-lead mineralization. The uranium is contained in thin

coatings (often yellow) along fault surfaces. **Dev:** An adit approx. 6,400 ft. long. More than 12,000 ft. of underground workings. Diamond drill holes. **Improv:** Used primarily as a haulage way. **Assays:** A sample from a fault zone with abnormally large amount of yellow radioactive coating assayed 0.19% U₃O₈. **Prod:** 208,678 tons 1937 through 1943. **Ref:** 46, p. 29. 128, pp. 66-67. 156. 172.

Berkin

(see Wolf Creek under lead)

Blue Bucket (Kroll) (87)

(see also Metaline Mining & Leasing Co.)

Loc: SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 29 and N $\frac{1}{2}$ sec. 32, (39-43E), Metaline dist. **Elev:** 2,500 ft. **Access:** 2 mi. by road from Metaline Falls. **Owner:** Metaline Mining & Leasing Co., Spokane, Wash. (1932—). Spokane Lead Mines (1907-1908). Diamond R. Mining Co. (1918-1924). Riverview Mining Co. (1931). Century Zinc Co. (1932). **Ore:** Zinc, lead, silver. **Ore min:** Sphalerite, galena, smithsonite, cerussite. **Gangue:** Calcite, siderite. **Deposit:** Irregular replacement bodies of various sizes tending to lie along bedding zones, probably within the upper 350 ft. of the Metaline limestone, contain sphalerite and galena associated with silicified dolomite and calcite. **Dev:** 5,000 ft. of underground workings. **Assays:** 6% Zn, 1% Pb, tr. Ag. **Prod:** 1906, 1907, 1916-1918, 1922-1926, 1937-1950. 175,000 tons by 1942, 200 tons per day in 1942. 56,131 tons 1937 through 1943. **Ref:** 29, p. 31. 46, p. 29. 73, pp. 63-67. 97, 1907, 1908, 1917, 1923-1926, 1930. 98, 1922, 1925. 104, 6/15/32, p. 27; 3/15/36, p. 23. 106, 11/19/31; 5/19/32, p. 7; 7/34. 112, 1918, p. 176. 113, 5/36, p. 7; 8/20/36, p. 6. 128, pp. 65-66. 129, pp. 85-86. 141, p. 22. 172.

Blue Jim (93)

(see under silver)

Bluebird

(see Dumont)

Bob Tail and Four Flush (72)

Loc: Sec. 20, (39-43E), Metaline dist. **Access:** $\frac{1}{4}$ mi. from road. **Prop:** 2 unpatented claims. **Owner:** Abandoned (1941). Formerly Metaline Contact Mines. **Ore:** Zinc, lead. **Deposit:** Small showings in zinc and lead. **Dev:** Stripping. **Ref:** 29, p. 39.

Boundary (6)

(see under lead)

Bromide

(see La Sota under silver)

Bunker Hill

(see Lead Hill)

Buzzell

(see Lucky Strike)

Caribou (1)

(see under lead)

Cedar Creek (92)

Loc: Near center NW $\frac{1}{4}$ sec. 13, (38-42E). **Elev:** 3,000 ft. **Owner:** Unclaimed (1935). **Ore:** Zinc. **Ore min:** Sphalerite. **Gangue:** Limestone. **Deposit:** Scattered boulders of mineralized limestone which may or may not be in place. **Dev:** None. **Ref:** 158.

Clark

(see Josephine)

Cliff (20)

Loc: N $\frac{1}{2}$ NE $\frac{1}{4}$ sec. 22, (40-43E), Metaline dist. **Elev:** 2,730 ft. **Access:** About 11 mi. N. of Metaline Falls on the Z Canyon road. **Prop:** 1 patented claim: Cliff. **Owner:** Drumheller Investment Co., Spokane, Wash. (1935-1945). San Ramone Mining

Co. (1924). Pend Oreille Lead & Zinc Co. (1926-1935). **Ore:** Zinc, lead, silver, gold. **Ore min:** Galena, sphalerite. **Gangue:** Silicified dolomite. **Deposit:** Replacement of silicified dolomite. Replacement zone has been exposed 150 ft. on the surface and 112 ft. in one adit. **Dev:** 245 ft. of adits and shafts with 150 ft. of trenching. Diamond drilling. A stope 45 ft. long, 15 ft. wide, 15 ft. high is in the main (200-ft.) adit. **Assays:** One assay said to be typical showed 0.13% Pb, 1.35% Zn. Av. of 13 samples from main adit was 2.5% Zn, tr. Pb covering the interval from 140 to 165 ft. from portal. 848 tons milled in 1944 av. 0.16% Pb, 2.96% Zn. **Prod:** Prior to 1910, 1923-1924, 1944 (848 tons). **Ref:** 5, p. 198. 7, p. 49. 29, p. 37. 49, p. 4. 73, p. 63. 97, 1924, p. 293; 1925, p. 559. 113, 6/17/37, p. 7. 128, pp. 67-68. 158.

Coffin (90)

Loc: SE $\frac{1}{4}$ NW $\frac{1}{4}$ and SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 16, (38-42E), near the head of Jim Cr. **Elev:** 5,000 ft. **Access:** Right of way for a road cleared to property from Smackout Pass road W. of Ione in 1937. **Prop:** 40-acre State lease. **Owner:** A. E. Torelle, Spokane, Wash., has 20-yr. mining lease (1943). **Ore:** Zinc, lead, molybdenum. **Ore min:** Sphalerite, galena, pyrrhotite, molybdenite, pyrite. **Gangue:** Diopside, serpentine, jefferisite, talc, pink diopside, calcite. **Deposit:** Contact metamorphic replacement of dolomite. Mineralized zone is about 25 ft. thick and consists of parallel mineralized seams. **Dev:** A few shallow cuts and adits total about 100 ft. **Assays:** One assay gave 1.8% Zn, 3.6% Pb, 0.1 oz. Ag. Another gave 4.4% Pb, 1.56% Mo. **Ref:** 29, p. 41. 128, p. 65. 158.

Columbia Lead & Zinc Mining Co. (21)

(see also Hoage)

Loc: Secs. 15, 22, and 27, (40-43E), Metaline dist. **Elev:** 2,700 ft. **Access:** About 10 mi. N. of railroad at Metaline Falls by way of Z Canyon road. **Prop:** Includes 7 Hoage claims, 19 other unpatented claims, and 2 patented claims. **Owner:** Columbia Lead & Zinc Mining Co., Spokane, Wash. (1952—). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena, pyrite. **Gangue:** Dolomite, coarse calcite. **Deposit:** Ore minerals disseminated in silicified dolomite. Mineralized outcrops exposed in several places along the strike for 1,200 ft. One ore body, 51 ft. long, 7 to 15 ft. wide, reported to assay 4% to 23% Pb, Zn. **Dev:** 2 adits total 225 ft., also numerous open cuts. One adit has a stope 18 ft. long and 7 ft. high which does not extend to the limits of the ore. **Improv:** Compressor, drills, track, cars, tools (1952). **Assays:** Composite of many samples of the 30 tons of stockpiled hand-sorted ore showed 4.15% Pb, 11.1% Zn. **Prod:** No shipments, but 30 tons of hand-sorted ore were piled at the mine portal in 1945, and 200 tons of lower grade ore were stockpiled in 1951. **Ref:** 133, p. 32. 158.

Comstock (101)

(see under lead)

Corzine (91)

(see under lead)

Diamond Eagle (75)

Loc: Secs. 19 and 30, (39-43E), Metaline dist. **Access:** No road. **Prop:** 27 unpatented claims. **Owner:** Formerly Metaline Contact Mines but now abandoned (1941). **Ore:** Zinc, lead. **Deposit:** Small showings of zinc and lead. **Dev:** Open cuts. **Ref:** 29, pp. 38-39.

Diamond R. (77)

(see under lead)

Dreadnaught-Emily

(see Hoage)

Dumont (Bluebird) (32)

Loc: Sec. 25, (40-43E) and secs. 30 and 31, (40-44E), on Slate Cr., Metaline dist. **Elev:** 2,600 ft. **Access:** 7½ mi. NE. of Metaline Falls on Slate Cr. road. **Prop:** 48 claims. **Owner:** American Zinc, Lead & Smelting Co., St. Louis, Mo. (1952—). H. L. Kimmel, William and George Dumont (1943-1951). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena, pyrite. **Gangue:** Dolomite. **Deposit:** Sphalerite and galena disseminated in dolomite. **Dev:** 50-ft. adit, several open cuts. In 1952 the deposit was being explored by means of a \$120,000 diamond drilling program. **Assays:** Ore at junction of Slumber and Slate Creeks is est. to av. 3% Zn. **Ref:** 128, p. 64. 133, p. 30. 158.

Eagle (42)

Loc: Sec. 28, (40-44E), Metaline dist. **Access:** ¼ mi. from road. **Prop:** 3 unpatented claims. **Owner:** Andre Balach, Metaline Falls, Wash. (1941). **Ore:** Zinc, lead. **Deposit:** Replacement deposit in silicified limestone. **Dev:** Open cuts and trenches. **Ref:** 29, p. 49.

Emily

(see Hoage)

Eureka (40)

Loc: Sec. 29, (40-44E), Metaline dist. **Access:** ¾ mi. from road. **Prop:** 5 unpatented claims and 2 fractions. **Owner:** Dumont brothers, Metaline Falls, Wash. (1941). **Ore:** Zinc, lead, silver. **Deposit:** Replacement zone in silicified limestone is exposed on the surface for a length of 1,000 ft. and a width of 50 ft. **Dev:** 80 ft. of adit, numerous open cuts. **Ref:** 29, pp. 54-55.

Fairview-Hoosier (76)

Loc: Secs. 19, 20, and 30, (39-43E), Metaline dist. **Access:** Road. **Prop:** 5 unpatented claims. **Owner:** Pend Oreille Premier Mining Co. (1941). **Ore:** Zinc, lead. **Gangue:** Quartz. **Deposit:** Mineralized fracture zone. **Dev:** 200 ft. of adit, several open cuts. **Ref:** 29, p. 41. 73, pp. 69-70. 158.

Flusey

(see Flusey-Hoopala under lead)

Flusey-Hoopala (30)

(see under lead)

Flying Squirrel

(see Giant-Flying Squirrel)

Four Flush

(see Bob Tail and Four Flush)

Galena Hill

(see Whoopie-Galena Hill)

Gardner (3)

(see also Tom Cat)

Loc: Secs. 3 and 10, (40-43E), Metaline dist. **Access:** Road. **Prop:** 9 unpatented claims, including: Tom Cat, Champion, Ole Olson. **Owner:** E. O. Dressel and associates, Metaline Falls, Wash. (1941). **Ore:** Zinc, lead. **Deposit:** Replacement deposit in silicified limestone has been exposed for 150 ft. by trenching. **Dev:** 80 ft. of shaft and adit, trenches, and 560 ft. of diamond drill holes. **Ref:** 29, pp. 52-53.

General MacArthur (102)

(see under lead)

Georgia Rose-Texas Slim (18)

Loc: Secs. 14 and 23, (40-43E), Metaline dist. **Access:** 1½ mi. from road. **Prop:** 4 unpatented claims. **Owner:** Mr. Pfeiffer and associates, Metaline, Wash. (1941). **Ore:** Zinc, lead. **Deposit:** Replacement deposit in limestone sparsely mineralized. **Dev:** Open cuts partially caved. **Ref:** 29, pp. 45-46.

Giant-Flying Squirrel (22)

Loc: Near center sec. 22, (40-43E), Metaline dist. **Elev:** 3,000 ft. **Access:** About 10 mi. from Metaline Falls on Z Canyon road. **Prop:** 2 unpatented claims: Giant, Flying Squirrel. **Owner:** Sullivan Mining Co., Wallace, Idaho (1952—). James Ehle, Metaline, Wash. (1941). **Ore:** Zinc, lead, silver. **Ore min:** Sphalerite, galena, smithsonite. **Gangue:** Silicified dolomitic limestone and coarse calcite. **Deposit:** Ore minerals disseminated in silicified dolomitic limestone. Ore zone exposed for a length of 300 ft. **Dev:** 3 adits, 373 ft., 50 ft., and 30 ft. long; numerous open cuts and benches. **Improv:** Compressor (1937), several buildings. **Assays:** Est. to av. less than 2% combined lead and zinc. Chip samples from a 3-ft. zone showed no Pb, 7.10% Zn. Sample representing a 12-ft. zone showed 0.50% Pb, 3.45% Zn. **Ref:** 29, p. 56. 51, p. 5. 128, p. 68. 158.

Gilt Top (33)

Loc: Sec. 25, (40-43E), Metaline dist. **Access:** Road. **Prop:** 4 unpatented claims. **Owner:** George Wehnert et al., Metaline Falls, Wash. (1941). **Ore:** Zinc, lead. **Deposit:** Replacement deposit in silicified limestone has been exposed for a length of 400 ft. and a width of 60 ft. **Dev:** Open cuts, stripping. **Ref:** 29, p. 47. 104, 7/15/34, p. 26.

Glass

(see General MacArthur under lead)

Gold Hill (64)

(see under lead)

Grandview mine (68)

(see also Grandview Mines, Inc.)

Loc: Secs. 14, 15, 22, and 30, (39-43E), Metaline dist. **Elev:** 2,400 ft. **Access:** About 2½ mi. by road to railroad at Metaline Falls. **Prop:** 11 patented claims. **Owner:** American Zinc, Lead and Smelting Co., St. Louis, Mo. (1937—), leasing from Grandview Mines Inc., Spokane, Wash. (1929—). **Ore:** Zinc, lead, silver, cadmium. **Ore min:** Sphalerite, galena, smithsonite, cerussite, pyrite, marcasite, and unknown uranium mineral of no commercial importance. **Gangue:** Dolomite, coarse calcite, mountain leather. **Deposit:** Flat-lying irregular massive replacements and disseminations of zinc-lead ore in dolomite. The uranium mineralization is noncommercial and appears to be unrelated to the zinc-lead ore. It occurs in black carbonaceous seams about 0.1 ft. thick, thin fault gouge zones, and as yellow secondary uranium minerals depositing from descending ground waters. **Dev:** Many thousand ft. of underground workings. 28,367 ft. of development work done from 1940 to 1951 inclusive. **Improv:** 750-ton flotation mill, 6 dwellings (1952). **Assays:** 5.5% Zn, 1.5% to 2.0% Pb, tr. Ag. Material from the black carbonaceous seams assayed 0.16% U₃O₈. **Prod:** 1924-1926, 1928-1930, 1940-1955. 1,254,000 tons 1940-1951 inclusive. **Ref:** 29, p. 32. 43, 2/53, p. 148; 5/54, pp. 56-59. 46, pp. 20-28. 73, pp. 59-60. 97, 1924-1926, 1929, 1930, 1941-1952. 104, 7/15/36, p. 30. 108, 10/39, p. 31; 4/43; 5/43. 113, 6/17/37, p. 7. 114, no. 5, 1909, p. 4. 128, pp. 68-69. 133, pp. 30, 34. 156. 158. 172.

Grandview Mines, Inc.

(see also Red Top, Hidden Treasure, Mohawk under lead, and Grandview mine under zinc)

Loc: Northern Pend Oreille and Stevens Counties. **Prop:** Own or lease mineral rights on 9,000 acres, including Grandview mine, Hidden Treasure, Red Top, and many others. **Owner:** Grandview Mines, Inc., Spokane, Wash. (1952—). Leasing Grandview mine to American Zinc, Lead and Smelting Co. **Ore:** Zinc, lead, silver, and other values. **Ref:** 133, p. 34.

Hanley (4)

Loc: NE¼ sec. 10, (40-43E), Metaline dist. **Access:** 1 mi. from road. **Prop:** 1 patented claim: Hanley. **Owner:** Joseph

Drumheller, Spokane, Wash. (1941—), leasing to Columbia Lead & Zinc Mining Co. (1941-1943). **Ore:** Zinc, lead, silver. **Deposit:** Replacement deposit in silicified limestone traceable for 300 ft. on the surface. **Dev:** 20-ft. shaft, large open cut. **Prod:** 2 carloads high-grade lead-silver ore from open cut in the 1880's. **Ref:** 29, p. 35. 68, p. 7. 73, p. 63. 113, 6/11/37, p. 7. 158.

Hansen (105)

(see under gold)

Hanson

(see Red Top under lead)

Hemlock (52)

(see under lead)

Hidden Treasure (62)

(see under lead)

Hoage (Dreadnaught-Emily) (23)

Loc: Center S½ sec. 22, (40-43E), a few hundred ft. NE. of Batay Lk., Metaline dist. **Elev:** 2,700 ft. **Access:** About 10 mi. N. of Metaline Falls on Z Canyon road. **Prop:** 7 unpatented claims. Part of Columbia Lead & Zinc Mining Co., Inc. property (1952). **Owner:** Columbia Lead & Zinc Mining Co., Inc., Spokane, Wash. (1952—). E. J. Hoage, Metaline, Wash. (1941-1948). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena, pyrite. **Gangue:** Dolomite, coarse calcite. **Deposit:** Ore minerals disseminated in silicified dolomite. Mineralized outcrops exposed in several places along the strike for 1,200 ft. **Dev:** 2 adits total 225 ft., also numerous open cuts. One adit has a stope 18 ft. long, 7 ft. wide, 7 ft. high which does not extend to the limits of the ore. **Assays:** Composite assay of many samples of the 30 tons of stockpiled hand-sorted ore showed 4.15% Pb, 11.1% Zn. **Prod:** No shipments, but 30 tons of hand-sorted ore were piled at the mine portal in 1945 and 200 tons of lower grade ore stockpiled in 1951. **Ref:** 29, p. 56. 52, p. 8. 128, p. 69. 158.

Hoosier

(see Fairview-Hoosier)

Huffman

(see Mule Deer under lead)

Ira Troyer

(see Troyer under lead)

Iron Cap (51)

(see under lead)

Jenny Dee-Snowshoe (50)

(see under lead)

Jim Creek (89)

(see under lead)

Jordan

(see under lead)

Josephine (Clark) (69)

(see also Pend Oreille Mines & Metals Co., and see Sullivan, Hortense under lead)

Loc: S½ sec. 16, (39-43E), on W. side Pend Oreille R., Metaline dist. **Elev:** 2,100 ft. **Access:** About 3 mi. from Metaline Falls on Z Canyon road. **Prop:** 20 claims and 1 fraction. At least 17 claims patented. **Owner:** Pend Oreille Mines & Metals Co., Spokane, Wash. (1934—). Lead-Zinc Co. (1912-1924). Metaline Lead Co. (1924-1926). Pend Oreille Lead & Zinc Co. (1928-1929). **Ore:** Zinc, lead, silver, cadmium. **Ore min:** Sphalerite, galena, pyrite, cerussite, smithsonite, anglesite, marcasite, unidentified uranium mineral. **Gangue:** Calcite, quartz, mountain leather. **Deposit:** Ore disseminated in silicified

dolomite, especially in brecciated zones cemented by calcite. Replacement ore bodies of irregular shape and grade are near top of Metaline limestone, below black slate. Known ore bodies are 5,000 ft. long, as much as 700 ft. wide, and up to 100 ft. thick (1941). Uranium mineralization is not commercial. It is apparently not related to the zinc-lead ore mineralization. It occurs (1) in a small zone of the Josephine dolomite, (2) in black carbonaceous beds 0.05 to 0.2 ft. thick, and (3) as a "skin" on a fault. **Dev:** 3 connected openings, Josephine shaft, Cascade or 500-ft.-level adit, and a new shaft. Over a mile of workings. **Improv:** 750-ton flotation mill, 2,400-ton flotation mill. Complete camp (1956). **Assays:** Composite sample of ore mined during 8 months in 1931 showed 9.5% Zn, 2.0% Pb, 0.02% Cd. Material from black carbonaceous bed showed 0.16% U₃O₈, and material from a fault surface showed 0.08% U₃O₈. **Prod:** 40,000 tons valued at \$275,000 prior to 1919. 243,000 tons prior to 1935. 1936-1955. 187,000 tons in 1949. 273,520 tons in 1951. **Ref:** 5, pp. 196-197. 7, pp. 47-48. 29, p. 33. 46, pp. 7-19. 73, pp. 56-59. 97, 1912, 1915, 1916, 1925, 1926, 1928, 1930, 1931, 1934, 1937-1951. 98, 1918-1926. 104, 7/15/34, p. 26. 108, 4/41, pp. 3-8; 6/49, pp. 14-17. 112, p. 188. 113, 8/20/26, p. 6. 114, no. 5, 1909, p. 54. 128, pp. 72-74. 133, p. 38. 156. 158. 172.

King Tut (58)

(see under lead)

Kroll

(see Blue Bucket)

Kurlew (59)

(see under lead)

Lakeview (12)

Loc: S½ SW¼ sec. 1, (40-43E), on slope N. of Crescent Lk., Metaline dist. **Elev:** 2,700 ft. **Access:** About 15 mi. N. of Metaline Falls on Crescent Lk. road. **Prop:** 4 unpatented claims. **Owner:** Ivar W. Luhr and associates, Metaline Falls, Wash. (1941). **Ore:** Zinc, lead, silver. **Ore min:** Sphalerite, galena, pyrite. **Gangue:** Dolomitic limestone. **Deposit:** Nodules of ore an inch or two in dia. with galena cores and sphalerite borders, in dolomite near a fault. Mineralized zone exposed for 200 ft. in length and 15 ft. in width. **Dev:** 325 ft. of workings, including one 255-ft. adit. **Ref:** 29, p. 49. 106, 12/1/32, p. 9. 128, pp. 69-70. 158.

La Sota (Silver Crest, Bromide) (96)

(see under silver)

La Sota (Troyer)

(see Troyer under lead)

Last Chance (36)

(see under lead)

Last Chance (55)

(see under lead)

Lead Hill (Bunker Hill) (63)

Loc: Secs. 11, 12, 13, 22, 23, 27, and S½NE¼ sec. 14, (40-44E), on upper Slate Cr., Metaline dist. **Elev:** 4,900 ft. **Access:** 15 mi. NE. of Metaline Falls on Slate Cr. road. **Prop:** 50 claims: Lead Hill Nos. 1 to 18, A Z O Nos. 1 to 32. **Owner:** American Zinc, Lead & Smelting Co., St. Louis, Mo. (1945—). Leadhill Mines, Inc. (1931-1934). Bunker Hill & Sullivan Mining & Concentrating Co. (1930). Chas. Bostrom and Ivar Luhr (1941-1944). **Ore:** Lead, zinc, silver. **Ore min:** Galena, sphalerite, smithsonite. **Gangue:** Microcrystalline quartz, dolomite, barite. **Deposit:** Galena and sphalerite disseminated in dolomite and jasperoid. Ore zones are flat-dipping replacements. **Dev:** A 1,400-ft. adit and many surface cuts, shallow adits, and 23,321 ft. of diamond drill holes (1952). **Improv:**

Compressor and shop building, three 100-ton ore bins, access roads (1952). **Assays:** Assays on shipments showed 62.05% Pb, 3.6 oz. Ag; but, as a whole, zinc predominates over lead in the ratio of more than 2 to 1. **Prod:** Small carload of hand-picked galena shipped in 1937. Milled 1,230 tons in 1951, 9,570 tons in 1952. **Ref:** 29, p. 33. 71. 97, 1938, p. 459; 1951, p. 1615. 99, 11/27/34. 104, 11/15/34, p. 27. 106, 2/5/31; 3/19/31; 4/16/31; 6/16/32. 113, 10/34, p. 14. 128, p. 63. 158.

Lead Hill Extension (46)

Loc: Secs. 15, 21, and 22, (40-44E), Metaline dist. **Prop:** 9 unpatented claims. **Owner:** Harry Meyers, Newport, Wash. (1941). **Ore:** Zinc, lead. **Deposit:** Replacement deposit in limestone largely hidden by overburden. **Dev:** Open cuts, mostly in overburden. **Ref:** 29, p. 55.

Lead King (25)

(see under lead)

Lead Metal (65)

(see under iron)

Lead Queen (8)

(see under lead)

Little Noisy (94)

Loc: NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 17, (38-44E), on N. side of Noisy Cr. about 1 mi. above its mouth. **Elev:** 3,500 ft. **Access:** 13 mi. from Ione on the Sullivan Lk. road and $\frac{1}{2}$ mi. by trail up Noisy Cr. Canyon. **Prop:** 6 unpatented claims. **Owner:** I. E. Boswick and A. Krantz, Ione, Wash. (1951). **Ore:** Zinc, lead, silver, gold, copper. **Ore min:** Sphalerite, galena, chalcopryrite, molybdenite, pyrrhotite, scheelite, pyrite. **Gangue:** Quartz, carbonate, tourmaline. **Deposit:** Quartz vein 1 to 4 ft. thick and at least 460 ft. long in metamorphic rocks and granite, also mineralized dolomite. **Dev:** 3 adits, one 230 ft., one 80 ft., and one 950 ft. (caved). A 30-ft. shaft, and an open cut. **Assays:** 0.25% scheelite. Said to run \$1.50 Au. Av. of all values is \$25 per ton. One sample showed 10.5% Pb, 14.9% Zn, 5.05 oz. Ag, 0.03 oz. Au. **Ref:** 29, p. 62. 37, pp. 54-55. 46, p. 35. 68, p. 12. 128, p. 65. 158.

Lloyd (103)

(see under lead)

Lookout (35)

(see under lead)

Lucky Boy (57)

(see under lead)

Lucky Boy Rex (34)

Loc: Sec. 25, (40-43E) and sec. 30, (40-44E), Metaline dist. **Access:** Road. **Prop:** 7 unpatented claims. **Owner:** Dumont brothers, Metaline Falls, Wash. (1941—). **Ore:** Zinc, lead. **Deposit:** Replacement deposit of silicified limestone has been traced on the surface for a length of 200 ft. and a width of 6 to 80 ft. **Dev:** 210 ft. of adits, numerous open cuts. **Ref:** 29, pp. 47-48. 104, 7/15/34, p. 26. 133, p. 30. 158.

Lucky Strike (Buzzell) (37)

Loc: NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 35, (40-43E), on E. side of Pend Oreille R., Metaline dist. **Access:** About 9 mi. from Metaline Falls on the Slate Cr. road. **Prop:** 4 unpatented claims. **Owner:** R. L. Lakin and associates, Spokane, Wash. (1942). Silver-Lead Mining Co. (1907). **Ore:** Zinc, lead, iron. **Ore min:** Sphalerite, pyrite, smithsonite, limonite. **Gangue:** Dolomite, coarse calcite. **Deposit:** Mineralized breccia zone from 0 to 4 ft. in width. Parts of the zone are nearly solid pyrite. Probably less than 100 tons of limonite available. **Dev:** An inclined shaft and several drifts, inaccessible in 1937. **Prod:** 1922, 1925. **Ref:** 29, p. 40. 97, 1923, p. 413; 1926, p. 468. 116, no. 12, 1907, p. 16. 128, p. 71. 158.

M M (13)

(see under lead)

Mack (53)

(see under lead)

Mammoth

(see Morning and Mammoth under lead)

May Thomas

(see under lead)

Maybeso (54)

(see under lead)

Metaline Contact (73)

(see also Metaline Mining & Leasing Co.)

Loc: E $\frac{1}{2}$ SW $\frac{1}{4}$ and W $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 20, (39-43E), Metaline dist. **Elev:** 3,000 ft. **Prop:** 160 acres. **Owner:** Metaline Mining & Leasing Co., Spokane, Wash., lessee (1949). **Ore:** Zinc, lead, silver. **Ore min:** Sphalerite, galena, minor pyrite. **Deposit:** Replacement deposit in brecciated zones along limestone-dolomite contact. **Dev:** 2,500 ft. of raises, 2,650 ft. of drifts, 250 ft. of slabbing. **Ref:** 46, p. 29. 68, p. 13.

Metaline Falls (79)

(see under lead)

Metaline Metals (66)

(see also Pend Oreille Mines & Metals Co.)

Loc: Secs. 2, 10, 11, and 15, (39-43E) and sec. 35, (40-43E), Metaline dist. **Access:** 6 mi. from Metaline Falls by road. **Prop:** 3 patented and 39 unpatented claims. **Owner:** Pend Oreille Mines & Metals Co. (1949). **Ore:** Zinc, lead, silver. **Deposit:** Replacement of silicified limestone. **Dev:** 400-ft. shaft with 2 levels; total about 1,000 ft. of workings. Some diamond drilling. **Assays:** Av. ore runs 4.5% Zn, 1.0% Pb, tr. Ag. **Ref:** 29, p. 34.

Metaline Mining & Leasing Co. (81)

(see also Bella May, Blue Bucket, Riverview, Metaline Contact, Sterling under zinc, and Red Top, Diamond R., Hidden Treasure under lead)

Loc: Secs. 26, 29, 30, 32, and 35, (39-43E), Metaline dist. **Elev:** 2,000 to 3,100 ft. **Access:** $\frac{1}{4}$ mi. S. of Metaline on State Highway 6. **Prop:** 39 claims and 376 acres deeded land, plus other leased property. **Owner:** Metaline Mining & Leasing Co. has operating agreement with Sullivan Mining Co., Wallace, Idaho (1950-1971). **Ore:** Zinc, lead, silver. **Ore min:** Sphalerite, galena, pyrite, marcasite, unidentified uranium mineral. **Gangue:** Silicified limestone and dolomite. **Deposit:** Replacement in dolomitic limestone. **Dev:** Main haulage adit more than 6,000 ft. long. More than 12,000 ft. of workings, diamond drill holes. Completed in 1950: 1,905 of drifting, 532 ft. of raising, 4,673 ft. of diamond drilling. **Assays:** 264,809 tons produced Oct. 1937 through Dec. 1947 av. 7.45% combined lead and zinc. 439,809 tons produced av. 6.55% combined lead and zinc. **Prod:** 410,724 tons of ore valued at \$2,573,294 in 1938-1947. **Ref:** 104, 6/15/32, p. 27; 3/15/36, p. 23. 106, 7/34. 108, 7/39. 113, 8/20/36, p. 6. 133, p. 37. 156. 158. 172.

Mockingbird (29)

(see under lead)

Morning and Mammoth (67)

(see under lead)

Mount Pisgah (104)

(see under lead)

Mountain Goat (5)

(see under lead)

Mule Deer (98)
(see under lead)**O. K. (84)**
(see under silver)**Ore Hill (83)**

Loc: Secs. 33 and 34, (39-43E), Metaline dist. **Access:** Near road. **Prop:** 10 unpatented claims. **Owner:** Abandoned (1941). **Ore:** Zinc, lead. **Deposit:** Slight mineralization of limestone. **Dev:** Open cuts and stripping. **Ref:** 29, p. 43.

Oriole (74)

Loc: SE. cor. sec. 19, (39-43E), on N. slope of Linton Mtn., Metaline dist. **Elev:** 3,000 ft. **Access:** 1½ mi. from old Metaline on Linton Cr. road. **Prop:** 7 claims and 1 fraction. **Owner:** Arthur Betchart and E. O. Dressel, Jr., Metaline Falls, Wash. (1953—). Oriole Mining & Milling Co. 1907). Metaline Oriole Mining Co. (1911-1924). Metaline Minerals Co. (1922-1924). Frank Schultz (1935). W. L. Schultz, Metaline, Wash. (1942). **Ore:** Zinc, lead, silver, copper, gold. **Ore min:** Sphalerite, galena, tetrahedrite, chalcocopyrite, pyrite, malachite, azurite, smithsonite, cerussite, bornite. **Gangue:** Quartz, calcite, dolomite. **Deposit:** Quartz lenses up to 3 ft. wide and 20 ft. long along a gouge breccia seam in dolomite. **Dev:** 2,000 ft. of workings, mostly in 3 adits. **Assays:** Smelter returns on carload of picked ore: 42.1 oz. Ag, 21.9% Zn, 15.3% Pb, 1.12% Cu. **Prod:** 2,000 tons up to 1942. 1911, 1912, 1925, 1926, 1953. **Ref:** 5, pp. 195-196. 7, pp. 46-47. 29, p. 36. 73, pp. 67-69. 97, 1912, 1917, 1926. 98, 1922, p. 1655; 1925, p. 1823. 112, p. 190. 114, no. 5, 1909, p. 56. 116, no. 8, 1907, p. 14. 128, pp. 76-77. 129, pp. 87-88. 141, p. 46. 158.

Pacnor Mines

Loc: Russian Cr. area. **Prop:** 47 claims. **Owner:** Pacnor Mines, Inc., Spokane, Wash. (1952). **Ore:** Zinc, lead. **Ref:** 158.

Pay Day (16)

Loc: Secs. 15 and 22, (40-43E), Metaline dist. **Access:** ½ mi. from road. **Prop:** 1 unpatented claim. **Owner:** Jack Dannelson, Metaline, Wash. (1941). **Ore:** Zinc, lead. **Deposit:** Replacement zone in silicified limestone has been traced on the surface for about 150 ft. in length and 10 ft. in width. **Dev:** 15-ft. shaft, open cut. **Ref:** 29, p. 44.

Pearson (82)

Loc: Sec. 33, (39-43E), Metaline dist. **Access:** Road. **Prop:** 80 acres of deeded land used for farming. **Ore:** Zinc, lead. **Dev:** None. **Assays:** Traces of lead and zinc. **Ref:** 29, p. 44.

Peewee (15)

Loc: Sec. 15, (40-43E), Metaline dist. **Access:** 300 yd. from road. **Prop:** 3 unpatented claims. **Owner:** Jim Ehle, Metaline, Wash. (1941). **Ore:** Zinc, lead. **Deposit:** Replacement of limestone. **Dev:** 40 ft. of tunnel, open cuts. **Ref:** 29, p. 45.

Pend Oreille Iron, Lead, and Zinc (14)

Loc: Sec. 6, (40-44E), Metaline dist. **Prop:** 20 unpatented claims. **Owner:** Abandoned (1941). **Ore:** Zinc, lead. **Deposit:** Slight showings of zinc and lead. **Dev:** Open cuts. **Ref:** 29, pp. 61-62.

Pend Oreille Mines & Metals Co. (70)

(see also Josephine, Metaline Metals, Torrential-Sphinx, Yellowhead under zinc, and Flusey-Hoopala, Washington, Metaline Falls, Riverside, Z Canyon under lead)

Loc: Metaline dist. **Access:** Road. **Prop:** Several hundred acres of deeded property, many claims, including Josephine mine. Also own controlling interest in Reeves MacDonald Mines, Ltd. **Owner:** Pend Oreille Mines & Metals Co., Spokane,

Wash. (1934—). **Ore:** Zinc, lead, silver, cadmium. **Ore min:** Sphalerite, galena, pyrite, marcasite, smithsonite, cerussite, unidentified uranium mineral. **Gangue:** Dolomite, jasperoid, calcite. **Deposit:** Replacement ore bodies of irregular shape and grade are near top of Metaline limestone, below black slate. Known ore bodies are 5,000 ft. long, as much as 700 ft. wide, and up to 100 ft. thick (1941). Uranium mineralization is not commercial. It is apparently not related to the zinc-lead mineralization. It occurs (1) in a small zone of the Josephine dolomite, (2) in black carbonaceous beds 0.05 to 0.2 ft. thick, and (3) as a "skin" on a fault. Gallium and germanium have been detected spectrographically in ore from the Chickahominy claim. **Dev:** More than a mile of underground workings. **Improv:** 750-ton flotation mill and 2,400-ton flotation mill, power plant, apartment house, complete camp (1954). **Assays:** Ore as mined was 5% to 7% Zn and 0.5% to 2% Pb in 1941. Ore produced in 1948 av. 5.87% Zn, 3.57% Pb. 1951 production av. 1.11% Pb, 2.37% Zn. **Prod:** 1927-1955, 3,111 tons valued at \$8.76 per ton in 1915 from Clark property. 123,751 tons of ore in 1948. 186,955 tons in 1949. 186,197 tons of ore in 1950 yielded 9,850,731 lb. Zn, 6,336,653 lb. Pb, 18,000 oz. Ag, 30,000 lb. Cu. 273,580 tons of ore in 1951 yielded 12,950,584 lb. Zn, 6,045,914 lb. Pb, 16,041 oz. Ag. 1952-1955. **Ref:** 1-C, 9/55, pp. 846-849. 43, 7/52, pp. 90-93. 83, 97, 1937-1952. 101, 11/53, pp. 28-29, 105. 108, 4/41; 5/41. 110, 7/48, p. 5. 133, p. 38. 156. 158. 172.

Pine Cone-Z Canyon (19)

Loc: Secs. 22 and 23, (40-43E), Metaline dist. **Access:** ½ mi. from road. **Prop:** 15 unpatented claims. **Owner:** Messrs. Pfeiffer and Dannelson, Metaline, Wash. (1941). **Ore:** Zinc, lead. **Deposit:** Replacement deposit in limestone. **Dev:** Open cuts. **Ref:** 29, p. 45.

Red Crown (38)

(see under lead)

Red Top (61)

(see under lead)

Riverview (28)

(see also Metaline Mining & Leasing Co.)

Loc: Secs. 26 and 35, (40-43E), Metaline dist. **Access:** 1 mi. from road. **Prop:** 5 unpatented claims. **Owner:** Metaline Mining & Leasing Co. (1949). **Ore:** Zinc, lead, silver. **Deposit:** Replacement deposit in silicified limestone. Zone shows only slight mineralization where exposed. **Dev:** 80 ft. of adits, numerous open cuts. **Ref:** 29, p. 44. 46, p. 29. 68, p. 13.

Robert E. Lee (39)

(see under lead)

Rocky Creek (97)

(see under silver)

Saddle (17)

Loc: Secs. 14, 15, 22, and 23, (40-43E), Metaline dist. **Access:** 1¼ mi. from road. **Prop:** Group of claims. **Owner:** Maude Lindstrom, Spokane, Wash. (1941). **Ore:** Zinc, lead, iron. **Deposit:** Replacement deposit in limestone exposed on the surface for about 300 ft. along the strike. **Dev:** 10-ft. adit, numerous open cuts and trenches. **Ref:** 29, p. 61.

Salmon (56)

(see under lead)

Scandinavian

(see Lead Queen under lead)

Silver Crescent (9)

(see under lead)

- Silver Crest**
(see La Sota under silver)
- Silverado**
(see Z Canyon under lead)
- Slate Creek (47)**
(see Whoopie-Galena Hill)
- Snowshoe**
(see Jenny Dee-Snowshoe under lead)
- Sphinx**
(see Torrential-Sphinx)
- Star (41)**
(see under lead)
- Star (43)**
(see under lead)
- Sterling (88)**
(see also Metaline Mining & Leasing Co.)
Loc: SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 32, (39-43E), Metaline dist. **Elev:** 2,000 ft. **Access:** On State highway. **Prop:** 10 patented claims. **Owner:** Metaline Mining & Leasing Co., Spokane, Wash. (1932-1949). Sterling Silver-Lead Co. (1915-1926). Century Zinc Co. (1932). **Ore:** Zinc, lead, silver. Cobalt and manganese have been reported but are not now known to occur here. **Ore min:** Galena, sphalerite. **Deposit:** Replacement deposit of Yellowhead type. The replacement deposit near the Bella May group is similar to that at the Metaline Contact property. **Prod:** 1918, 1926. **Ref:** 29, p. 31. 46, pp. 32-33. 68, p. 13. 97, 1918, p. 507; 1926, p. 468. 98, 1922, p. 1666; 1925, p. 1833. 104, 6/15/32, p. 27; 3/15/36, p. 23. 106, 7/34. 112, p. 204. 113, 8/20/36, p. 6.
- Sullivan (71)**
(see under lead)
- Sunshine (49)**
(see under lead)
- Tamarack (60)**
(see under lead)
- Texas Slim**
(see Georgia Rose-Texas Slim)
- Tom Cat (2)**
(see also Gardner)
Loc: Center S. line sec. 3, (40-43E), Metaline dist. **Elev:** 2,000 ft. **Access:** $\frac{1}{4}$ mi. E. of road 1 mi. N. of Z Canyon. **Prop:** 1 unpatented claim: Tom Cat (part of Gardner property). **Owner:** E. O. Dressel, Metaline Falls, Wash. (1937-1941). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena. **Gangue:** Dolomite. **Deposit:** Disseminations in dolomite and silicified carbonate rock. **Dev:** 26-ft. vertical shaft, 14-ft. drift, 2 open cuts, 3 diamond drill holes. **Assays:** 3 diamond drill holes showed 6 ore intersections 4 to 6 ft. thick which showed nil to 15.3% Pb, 0.4% to 1.8% Zn, the av. being 3.2% Pb, 0.9% Zn. 5 channel samples av. 1.1% Pb, 1.3% Zn. **Ref:** 19. 128, p. 74.
- Torrell**
(see under lead)
- Torrential-Sphinx (10)**
(see also Pend Oreille Mines & Metals Co.)
Loc: W $\frac{1}{2}$ SW $\frac{1}{4}$ sec. 11, (40-43E), Metaline dist. **Access:** Road. **Prop:** 2 unpatented claims. **Owner:** Pend Oreille Mines & Metals Co. (1941). **Ore:** Zinc, lead. **Ore min:** Sphalerite and some galena. **Deposit:** Replacement of silicified limestone. Ore body has been traced for 200 ft. laterally. **Dev:** 150 ft. of adits, raises, and shafts, and 200 ft. of trenching. **Ref:** 29, p. 35.
- Troyer (La Sota, Ira Troyer) (45)**
(see under lead)
- Twin Lakes (24)**
(see under lead)
- Uncas (44)**
Loc: Sec. 28, (40-44E), Metaline dist. **Elev:** 3,500 to 4,000 ft. **Access:** 2 mi. of trail from Slate Cr. road. **Prop:** 6 claims and 2 fractions. **Owner:** William and George Dumont. **Ore:** Zinc, lead, copper. **Ore min:** Sphalerite, galena, tetrahedrite, copper carbonates. **Gangue:** Dolomite, quartz. **Deposit:** Ore minerals disseminated in dolomitic limestone and in quartz lenses. **Dev:** 2 adits, both caved (1951). **Ref:** 128, p. 64. 158.
- Velvet**
(see under lead)
- Velvet Lode**
(see King Tut under lead)
- Washington (80)**
(see under lead)
- Washington Rock**
(see Washington under lead)
- West**
(see Blue Jim under silver)
- Whoopie-Galena Hill (Slate Creek) (48)**
Loc: Secs. 14, 15, 21, 22, and 28, (40-44E), on Slate Cr., Metaline dist. **Access:** Forest Service road. **Prop:** 18 unpatented claims: Galena Hill Nos. 1 to 8, Whoopie Nos. 1 to 5, May Day, May Day Fraction, Prospect No. 2. **Owner:** Fred E. Davenport and Ira Troyer, Metaline, Wash. (1941). **Ore:** Zinc, lead, silver. **Deposit:** Replacement deposit in silicified limestone. **Dev:** 310 ft. of adits, numerous open cuts. **Ref:** 29, p. 42. 46, p. 34.
- Wolf Creek (85)**
(see under lead)
- Woodpecker (26)**
Loc: Sec. 27, (40-43E), Metaline dist. **Access:** $\frac{1}{4}$ mi. from road. **Prop:** 5 unpatented claims. **Owner:** Abandoned (1941). Formerly Metaline Contact Mines. **Ore:** Zinc, lead. **Deposit:** Small showings of zinc and lead. **Ref:** 29, p. 39.
- Yellowhead**
(see also Pend Oreille Mines & Metals Co.)
Loc: Metaline dist. **Owner:** Pend Oreille Mines & Metals Co. (1930). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena, pyrite. **Deposit:** In upfaulted block of Metaline limestone. **Ref:** 97, 1930, p. 674. 172, pp. 8, 15.
- Z Canyon (Pine Cone-Z Canyon)**
(see Pine Cone-Z Canyon)
- Z Canyon (Silverado) (11)**
(see under lead)
- Z Canyon Mutual (7)**
Loc: N. center sec. 11, (40-43E), Metaline dist. **Elev:** 2,400 ft. **Access:** 1 mi. by road W. of Crescent Lk. **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena. **Gangue:** Dolomite, calcite. **Deposit:** Sparsely disseminated ore minerals in dolomite and breccia. **Dev:** 400-ft. adit and a few pits and small cuts. **Ref:** 128, p. 75.

PIERCE COUNTY

Golden Rule (1)

Loc: Center E $\frac{1}{2}$ sec. 24, (18-7E). **Access:** 1 mi. by trail N. of Queen Bee cabin. **Prop:** 1 claim (?). **Owner:** R. J. McGillivray, Alder, Wash. (1943). **Ore:** Zinc, molybdenum, copper. **Ore min:** Pyrite, sphalerite, molybdenite, scheelite (?), mala-

chite. **Deposit:** Black hard siliceous vein 18 in. wide in coarse granodiorite. **Dev:** 45-ft. adit. **Ref:** 158.

Silver Creek (3)
(see under gold)

Silver Creek Gold & Lead (2)
(see under gold)

SKAGIT COUNTY

Alta (8)
(see under lead)

Boston (9)
(see under lead)

British
(see Skagit Queen under silver)

Cerrico
(see under lead)

Chicago (10)
(see under lead)

Cliff (14)
Loc: NE¼ sec. 26, (35-13E). **Prop:** 1 claim: Cliff. **Owner:** Wm. Soren, Sedro Woolley, Wash. (1951). **Ore:** Zinc, copper. **Deposit:** Vein 1 ft. thick. **Ref:** 158.

Dorothy
(see Thunder Creek under lead)

Eldorado (12)
(see under silver)

Everett Extension
(see under silver)

Friend (15)
(see under silver)

Great Northern
(see under gold)

Iowa-Olympia
(see under silver)

Johnsburg (13)
(see under lead)

Kildare (16)
(see under lead)

Lakeside
(see under lead)

Logan No. 2 (3)
(see under silver)

Midas (17)
(see under silver)

Olympia
(see Iowa-Olympia under silver)

Pioneer (19)
(see under silver)

Protection (5)
(see under lead)

Silver Tip (6)
(see under lead)

Skagit Queen (2)
(see under silver)

Soldier Boy (18)
(see under gold)

Stenmo (4)
(see under lead)

Stephens (1)
(see under copper)

Thunder Creek (7)
(see under lead)

West Seattle (11)
(see under lead)

SKAMANIA COUNTY

Athens
(see under copper)

Bumble Bee
(see under copper)

Chicago (4)
(see under copper)

Coe
(see Sweden under copper)

Commonwealth (3)
(see under copper)

Golconda (2)
(see under gold)

Gold Creek
(see Zinc Creek)

Last Chance (7)
(see under copper)

St. Helens
(see Sweden under copper)

Snowflake (1)
(see under lead)

Sweden (5)
(see under copper)

Zinc Creek (Gold Creek) (6)
Loc: SW¼NE¼ and NW¼SE¼ sec. 13, (3-5E), on a tributary of Washougal R. **Elev:** 1,450 ft. **Access:** 13 mi. by road and 1½ mi. by trail from Cape Horn. **Prop:** State land. **Owner:** Leased by G. A., John, and Axel Bloomquist and Fred McKay, Vancouver, Wash. (1952—). E. G. Judd and Leslie E. Judd, Vancouver, Wash. (1947). **Ore:** Zinc. **Ore min:** Sphalerite, some galena and chalcopryrite. **Gangue:** Quartz, calcite, breccia, siderite. **Deposit:** Shear zone in volcanic rocks cemented by mineralized quartz and calcite. Zone av. 1 to 3 ft. but is 10 ft. wide at one place. **Dev:** 120-ft. drift, shaft, and surface exposures. **Assays:** Zn content of vein est. to be 5%. Au and Ag reported in assays. **Ref:** 158.

SNOHOMISH COUNTY

Ala-Dickson (17)
(see under copper)

Alleghany
(see Foggy under copper)

Blackman
(see Doris under copper)

Bonanza
(see Mineral Center under gold)

Broken Ridge (36)
(see under copper)

Brown
(see Doris under copper)

- Calumet (28)**
(see under gold)
- Calumet (41)**
(see under copper)
- Calumet (Glacier Peak)**
(see Glacier Peak under copper)
- Clara Thompson**
(see Jasperson under gold)
- Commonwealth**
(see Jasperson under gold)
- Cooperative (40)**
(see under copper)
- Darrington**
(see Gold Mountain under copper)
- Doris (29)**
(see under copper)
- Edison**
(see Mineral Center under gold)
- Feldt (2)**
(see under silver)
- Florence Rae (31)**
(see under copper)
- Foggy (23)**
(see under copper)
- "45" (13)**
(see under silver)
- Glacier Peak (9)**
(see under copper)
- Gold Mountain (8)**
(see under copper)
- Good Hope (25)**
(see under gold)
- Gray Mare (3)**
(see under silver)
- Howard**
(see Cooperative under copper)
- Index Gold Mines, Inc. (37)**
(see under gold)
- Iowa (30)**
(see under copper)
- Iowa**
(see Washington-Iowa under copper)
- Jasperson (32)**
(see under gold)
- Kazian (38)**
(see under copper)
- Larson (1)**
(see under lead)
- Lockwood Pyrite (19)**
(see under iron)
- Louise**
(see Mineral Center under gold)
- McCombs**
(see Jasperson under gold)
- Magus**
(see "45" under silver)
- Martin Engdahl (33)**
(see under lead)
- Marvel (42)**
(see under copper)
- Michigan (39)**
(see under gold)
- Milwaukee (14)**
Loc: SE¼ sec. 32, (30-10E), Sultan Basin dist. **Elev:** 2,750 to 2,950 ft. **Access:** A steep trail which leads from Williamson Cr. to Copper Lk. crosses the property. **Prop:** 8 unpatented claims: Milwaukee Nos. 1 to 8. **Owner:** Forrest E. Wing, Tacoma, Wash. (1943-1951). **Ore:** Zinc, lead, gold, silver. **Ore min:** Sphalerite, galena, chalcopryrite, arsenopyrite, pyrite. **Gangue:** Quartz with comb structure. **Deposit:** 2 quartz veins in metamorphic rocks, one 1 to 10 in. thick, the other 6 to 24 in. thick. **Dev:** 25-ft. drift and 2 open cuts. **Assays:** Owners report assay on sample from upper vein showed 10% Zn, 5% Pb, and values in Au and Ag. **Ref:** 23, pp. 46-47. 150, p. 41.
- Mineral Center (20)**
(see under gold)
- Mineral Mines (34)**
(see under copper)
- Mint**
(see Iowa under copper)
- Monte Cristo (24)**
(see under gold)
- Mountain Cedar (18)**
(see under copper)
- Mystery (Monte Cristo, Pride)**
(see Monte Cristo under gold)
- Mystery (Mountain Cedar, Paystreak)**
(see Mountain Cedar under copper)
- Nesta (6)**
(see under copper)
- North Star**
(see Sunrise under gold)
- O and B (22)**
(see under copper)
- Old Gray Mare**
(see Gray Mare under silver)
- Oldfield**
(see Sunrise under gold)
- Palmer**
(see under nickel)
- Paystreak**
(see Mountain Cedar under copper)
- Peabody (26)**
(see under gold)
- Penn**
(see Foggy under copper)
- Perm**
(see under gold)
- Pride**
(see Monte Cristo under gold)
- Queen Anne (7)**
(see under gold)
- Rustler (16)**
(see under copper)

S. M. P. (35)

Loc: Sec. 6, (28-11E), sec. 31, (29-11E), and sec. 1, (28-10E), Silver Cr. dist. **Prop:** 7 patented claims: Fourth of July, Frank, Independence, Merrill, Rambler, Rambler No. 1, Silver Creek. **Owner:** S. M. P. Mining Co., Seattle, Wash. (1949-1950). **Ore:** Zinc, copper, gold. **Ref:** 68, p. 15. 158.

Silver Coin (12)

(see under gold)

Silver Creek

(see Broken Ridge under copper)

Silver Horseshoe (15)

(see under silver)

Silver Queen (27)

(see under gold)

Sunrise (4)

(see under gold)

Threadwell

(see under gold)

Washington-Iowa (21)

(see under copper)

Wayside (10)

(see under copper)

Webster

(see Jasperson under gold)

Whitehorse (5)

(probably same property as Gray Mare under silver)

Loc: Near N. $\frac{1}{4}$ cor. sec. 30, (32-9E) and vicinity, on Whitehorse Mtn., Darrington dist. **Access:** Road. **Prop:** Large group of claims. **Owner:** Mr. Larsen. **Ore:** Zinc, lead, copper, silver, gold. **Ore min:** Sphalerite, galena, chalcopyrite. **Deposit:** Mineralized fractures in limestone and diorite. Mineralization very sparse. **Dev:** 5 short adits. **Assays:** As high as 60% Pb, 3% Zn, 25 oz. Ag are reported. Obviously these assays were on handpicked samples. **Ref:** 104, 5/30/33, p. 18; 10/15/33, p. 18; 2/28/37, p. 28. 158.

Yankee Boy (11)

(see under copper)

STEVENS COUNTY**A and C (83)**

(see under copper)

Abe Lincoln

(see Comstock under lead)

Acme (100)

(see under lead)

Admiral Consolidated (51)

Loc: Center W $\frac{1}{2}$ sec. 36, (40-41E), Northport dist. **Elev:** 2,400 ft. **Access:** 1 $\frac{1}{2}$ mi. N. of Leadpoint by road. 8 mi. from railroad at Boundary. **Prop:** Group of claims. **Owner:** Admiral Consolidated Mining Co., Spokane, Wash. (1947—). **Ore:** Zinc, lead, silver, cadmium. **Ore min:** Sphalerite, galena. **Gangue:** Dolomite. **Deposit:** 5- to 10-ft. zone of stringers and disseminated sphalerite in dolomite. **Improv:** 75-ton flotation mill (1955). **Assays:** One sample showed 2.8% Pb, 3.1% Zn. 5 cars of ore shipped in 1948 had 38% to 43% Zn. **Prod:** 1947-1952, 1954. 1,441 tons from 1947 through 1949. 1950 (406,166 lb. Zn, 10,866 lb. Pb, 135 oz. Ag). 1951 (15,000 tons of ore yielded 308,750 lb. Zn, 8,500 lb. Pb, 125 oz. Ag). **Ref:** 46, p. 99. 97, 1947-1951. 110, April-May 1948, p. 2. 133, p. 29. 157. 158.

Advance (40)

Loc: NE $\frac{1}{4}$ sec. 18, (39-41E), Northport dist. **Elev:** 4,000 ft. **Access:** Road. **Prop:** 28 unpatented claims and 840 acres of deeded land. **Owner:** Mines Management, Inc., Spokane, Wash. (1949—). **Ore:** Zinc, lead, silver, gold. **Ore min:** Sphalerite, galena. **Gangue:** Silicified limestone. **Deposit:** Low-dipping mineralized zone in limestone with interbedded slate exposed underground av. 10 ft. wide and is 200 ft. long. Surface trenching shows length of 4,000 ft. **Owner** reported 50,000 tons of indicated ore in 1952. **Dev:** About 750 ft. of workings in 3 adits, a shaft, and a winze prior to 1948. 1,100 ft. of drifts and cross-cuts and 771 ft. of raises added in 1948-1949. **Improv:** Compressor, mining machinery, 50-ton mill, 200-ton ore bin (1952). **Assays:** Ore contains traces of gallium and germanium. **Ref:** 30, p. 90. 133, p. 37. 158.

Aichan Bee (126)

(see under silver)

Aladdin (Blue Ridge, Sierra Zinc)

(see Sierra Zinc)

Aladdin (92)

(see under lead)

Alma (101)

(see under silver)

Anaconda (56)

(see under lead)

A. Anderson (50)

Loc: NE $\frac{1}{4}$ sec. 3, (39-41E), Northport dist. **Owner:** Grandview Mines, Inc., Spokane, Wash. (1953—). **Ore:** Zinc, lead, nickel. **Ore min:** Sphalerite, galena. **Deposit:** Replacement deposit in limestone near black slate contact. Also a narrow vein of 4% Ni. **Dev:** Trenches, diamond drill holes. **Ref:** 158.

Anderson (49)

Loc: NW $\frac{1}{4}$ sec. 2, (39-41E), on W. side of Deep Cr., $\frac{1}{2}$ mi. W. of Leadpoint. **Elev:** 2,200 ft. **Access:** 17 mi. by graveled road from railroad at Northport. **Prop:** Mineral rights on deeded land. **Owner:** Goldfield Consolidated Mines Co., San Francisco, Calif. (1948—). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena, pyrite. **Gangue:** Silicified dolomitic limestone. **Deposit:** Disseminations in limestone. **Dev:** Production is from open pit. **Assays:** Ore mined and milled av. 2.4% Zn, 0.5% Pb. **Ore reserve:** Reported by operator to be 500,000 tons (1952). **Prod:** 1948-1952. About 100,000 tons to end of 1951. **Ref:** 30, p. 97. 89. 133, p. 34.

Ark (99)

(see under silver)

Austin

(see Aichan Bee under silver)

Avondale-Dome (77)

(see under lead)

Banner

(see Chinto under copper)

Bear Mountain (104)

(see under lead)

Big Chief (79)

(see under lead)

Black Canyon

(see under lead)

Black Horse

(see Columbia Tungsten under tungsten)

Black Rock (Washington Black Rock, Gorien Zinc) (35)

Loc: Sec. 24, (39-40E), on E. side of Deep Cr. just N. of the Last Chance mine. **Elev:** 2,000 ft. **Access:** 6 mi. by road to railroad at Northport. **Prop:** 7 claims and 7 acres of deeded land. **Owner:** Last Chance Consolidated Mines, Inc., Spokane, Wash. (1952—). Gust Maki (1920). John Gorien (1921). Washington Black Rock Mining Co. (1922-1932). Black Rock Mining Co. (1936). Knob Hill Mines, Inc. (Willow Creek Mines, Inc.) (1943). **Ore:** Zinc, lead. **Ore min:** Sphalerite, smithsonite, galena. **Gangue:** Dolomite. **Deposit:** Disseminated ore in white unsilicified dolomitic marble along bedding planes. Two ore bodies shown by drilling appear to have moderate ore reserves with av. grade of 8% Zn. **Dev:** 250-ft. incline, 260-ft. adit, considerable drifting and stoping on the 200- and 250-ft. levels, diamond drill and churn drill holes. **Assays:** 6 carloads av. 40% Zn. Ore contains traces of gallium and germanium. **Prod:** 6 carloads of ore prior to 1920, 5,280 tons in 1922-1924, \$300,000 prior to 1930. Produced in 1943. **Ref:** 30, pp. 92-93. 46, pp. 82-84. 73, pp. 107-109. 97, 1923-1926, 1928. 98, 1922-1926. 106, 6/1/25, p. 7; 11/1/29, p. 25; 6/2/32. 113, 8/20/36, p. 6. 129, pp. 111-112. 130, p. 91. 133, p. 36. 141, pp. 21, 22, 46. 157. 158.

Black Witch

(see Alma under silver)

Bliss

(see Galena Hill under lead)

Blue Ridge

(see Sierra Zinc)

Blue Star

(see Eagle under silver)

Bonanza (72)

(see under lead)

Boundary Silver Lead

(see Lucile)

Brooks (123)

(see under silver)

Bruce Creek

(see A and C under copper)

Buffalo (68)

(see under silver)

Bullion (24)

(see under lead)

Burrus (Rocky Creek) (91)

Loc: Sec. 8, (37-41E), on Rocky Cr., Northport dist. **Elev:** 2,400 ft. **Access:** 1 mi. SE. of Aladdin by road. **Prop:** 8 patented claims. **Owner:** J. W. Burrus, Colville, Wash. (1947). **Ore:** Lead, silver, zinc, copper, gold. **Ore min:** Chalcopyrite, galena, sphalerite. **Gangue:** Quartz. **Deposit:** Mineralized zone with max. width of 60 ft. consists of small quartz veins in argillite. **Dev:** 80-ft. shaft and several short adits total 300 ft. of underground workings. **Assays:** Ore said to av. \$20 per ton in all values. **Prod:** 1938, 1939. **Ref:** 30, pp. 91-92. 46, p. 60. 52, p. 7. 97, 1939, p. 49; 1940, p. 480. 104, 8/15/34, p. 22; 11/30/35, p. 26; 3/15/38. 106, 11/3/32, p. 14; 7/34. 158.

Carbo (45)

Loc: E. edge of sec. 25, (39-41E), 1½ mi. E. of Deep Lk., Northport dist. **Access:** Trail from a point 2 mi. up the logging road which follows Currant Cr. **Prop:** Private land. **Owner:** Leased by John Colby, Northport, Wash., from North Columbia Lumber Co., Deer Park, Wash. (1942). **Ore:** Zinc. **Ore min:** Smithsonite. **Gangue:** Dolomite. **Deposit:** Ore is an aggregate of cavernous lenses of smithsonite-rich dolomite elongated parallel to bedding of low-dipping beds in lower Metaline

limestone. Ore zone is cut off by major fault 100 to 250 ft. down dip from outcrop. May be ore in breccia zone along fault. **Dev:** None (1944). **Assays:** Aggregate of exposed ore lenses and interbedded waste est. to av. 3% Zn for thickness of 15 ft. and strike length of 300 ft. A 12-ft.-thick lens showed 20.5% Zn. **Ref:** 20.

Chewelah Eagle

(see Eagle under silver)

Chinto (106)

(see under copper)

Chloride Queen (78)

(see under lead)

Cholett

Loc: Sec. 1, (37-39E), 5 mi. W. of Van Stone mine. **Elev:** 3,000-4,000 ft. **Owner:** American Smelting & Refining Co., Wallace, Idaho (1951—). **Ore:** Zinc, lead. **Ore min:** Sphalerite, pyrite. **Deposit:** Gossan and primary sulfides disseminated in Metaline limestone near intrusive contact with granodiorite. **Dev:** 7 bulldozer trenches, diamond drill holes. **Assays:** 5-ft. gossan assayed 7.9% Zn, and for 65 ft. the zone av. 2.2% Zn. **Ref:** 1-C, vol. 7, no. 10, pp. 937-940.

Cleveland (118)

(see under lead)

Clugston

(see Silver Trail under lead)

Columbia

(see Iroquois)

Columbia Tungsten (115)

(see under tungsten)

Colville Queen

(see Chloride Queen under lead)

Comstock (Abe Lincoln) (12)

(see under lead)

Contention

(see Mountain View under silver)

Copper King (55)

(see under lead)

Copper King (86)

(see under lead)

Coyote (19)

(see under lead)

Coyotte

(see Coyote under lead)

Daisy

(see Daisy-Tempest under silver)

Daisy-Tempest (102)

(see under silver)

Dead Medicine

(see Silver Trail under lead)

Deep Creek (Gorien Zinc, Northport) (38)

Loc: Secs. 23 and 24, (39-40E), about 100 yd. from the W. bank of Deep Cr. **Elev:** 1,900 ft. **Access:** 6 mi. by road to railroad at Northport. **Prop:** Several claims. **Owner:** The Goldfield Consolidated Mines Co., San Francisco, Calif. (1944—). Northport Mining Co. (1919-1921). Knob Hill Mines, Inc. (1943). Jamieson-Higginbotham (1944-1947). **Ore:** Zinc, lead, silver. **Ore min:** Sphalerite, galena, pyrite. **Gangue:** Dolomite and limestone. **Deposit:** Ore is in highly banded and contorted zone 50 to 100 ft. thick and 200 to 300 ft. long in dolomite. Lead

values are highest to the south. **Dev:** Incline shaft 850 ft. deep, workings on 8 levels. **Assays:** 1949 production reported to av. 4.25% combined Pb and Zn. One vein assayed 25% Pb, 6.8 oz. Ag. **Prod:** 1944-1952 (350,000 tons), 1953-1955. **Ref:** 30, p. 111. 46, pp. 80-81. 97, 1950, p. 1613; 1951, p. 1616. 108, 3/54, pp. 279-281. 129, pp. 107-110. 130, p. 91. 133, p. 34.

Deep Lake

(see Farmer)

Deer Trail (121)

(see under silver)

Defender (7)

Loc: N½ sec. 25, (39-36E), on W. slope of Toulou Mtn., Orient dist. **Elev:** 1,900 to 2,400 ft. **Access:** 1½ mi. SE. of Orient by road and trail. **Prop:** 11 claims and a fraction, 2 patented. **Owner:** Estate litigation (1941). Defender Mining Co. (1909-1914). **Ore:** Zinc, copper, gold, silver. **Ore min:** Sphalerite, pyrite, pyrrhotite, chalcopryite, galena, free gold. **Gangue:** Calcite, quartz, siderite. **Deposit:** 150-ft. zone near a fault in monzonite and amphibolite contains many viens. One is 18 in. wide. **Dev:** Small open cuts and shallow shafts on each claim and a 106-ft. inclined shaft on the Denver claim. **Assays:** A 60-ft. intrusive dike said to assay \$3 to \$4 Au. **Ref:** 7, pp. 80-81. 30, pp. 119-120. 46, pp. 103-104. 114, no. 5, 1909, pp. 61-62. 164, pp. 269-270.

Dora

(see Acme under lead)

Double Standard (14)

(see under copper)

Eagle (108)

(see under silver)

Easter Sunday (9)

(see under gold)

Easy Money

(see Magma)

Echo (80)

Loc: Sec. 14, (37-39E), adjacent to the Big Chief mine, Northport dist. **Prop:** 7 claims. **Owner:** Echo Mining Co. (1941). **Ore:** Zinc, lead, silver. **Ore min:** Mixed sulfides. **Deposit:** Presumably similar to the Big Chief deposit. **Dev:** 2 adits reportedly total 850 ft. of underground workings. **Ref:** 46, p. 51. 158.

Eldorado

(see Magma)

Electric Point (46)

(see under lead)

Emerald

(see under lead)

Empire (36)

Loc: Sec. 24, (39-40E), 5 mi. from Northport. **Ore:** Zinc, lead. **Ref:** 158.

Eureka (2)

(see under gold)

Eureka (Uncle Sam)

(see Uncle Sam under lead)

Eureka and Orient

(see Eureka under gold)

Evergreen (69)

(see under lead)

Farmer (Deep Lake) (42)

Loc: Sec. 34, (39-41E), at S. end of Deep Lk. **Elev:** 2,050 to 2,425 ft. **Access:** 12 mi. by road to railroad at Northport. **Prop:** 2 claims: King Tut No. 1, King Tut No. 2. **Owner:** John and Tom Farmer, Spokane, Wash. (1944—), leasing to C. W. and N. C. Hartbauer, Northport, Wash. (1950-1952). **Ore:** Zinc, lead, silver. **Ore min:** Sphalerite, galena, pyrrhotite, pyrite. **Gangue:** Dolomite, calcite. **Deposit:** Replaced and mineralized fracture zone in limestone is 2 to 20 ft. wide and has been traced for 600 ft. on the surface near granite contact. **Dev:** 135-ft. adit, a smaller adit, 150 ft. of shaft work, an open pit, 2 diamond drill holes. **Assays:** One diamond drill hole showed a 20-ft. intersection av. 5% Zn. General grade reported to be 2.5% Pb, Zn. Ore contains traces of gallium and germanium. **Prod:** Small amounts 1937, 1947-1951. **Ref:** 30, p. 102. 97, 1938, p. 460. 133, p. 33. 136. 158.

Flannigan

(see Iroquois)

Flat Creek (11)

Loc: Sec. 4, (39-38E), on Flat Cr. **Elev:** 2,830 ft. **Access:** 19 mi. by road to railroad at Northport. **Prop:** 3 unpatented claims. **Owner:** Claude Sanders, Northport, Wash., leasing from Otto Ehrendreich, Northport, Wash. (1939-1950). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena. **Deposit:** Narrow veins and related small replacement bodies in impure quartzite along fractures. Ore minerals are bunched and sparse as exposed in 1950. **Dev:** 8-ft. pit, several trenches. **Ref:** 157.

Frisco Standard (67)

(see under silver)

Galena Hill (6)

(see under lead)

Gillete

(see Avondale-Dome under lead)

Gladstone (47)

(see under lead)

Globe (8)

(see under copper)

Gold Bar (73)

(see under gold)

Gorien Zinc

(see Black Rock, Deep Creek, New England)

Note: In 1919 John Gorien was Treasurer of the Northport Mining Co., and this company owned or controlled 280 acres of mineral land on both sides of Deep Cr. Valley, probably including all of the properties described separately in this report under the names of Deep Creek (Northport, Gorien), New England (Stone), Black Rock (Washington Black Rock, Gorien Zinc), and probably including others also.

Great Republic (15)

(see under copper)

Great Western (33)

(see under lead)

Grubstake

(see under silver)

H & B

(see Aichan Bee under silver)

Hartbauer (54)

(see under lead)

Hartford

(see Krug under copper)

Hecla (109)

(see under copper)

Helena Johnson (37)

(see under lead)

Heritage (25)

Loc: Near center sec. 9, (39-39E), Northport dist. **Owner:** Wm. Heritage (1952). **Ore:** Zinc, tungsten. **Ore min:** Sphalerite, scheelite. **Deposit:** Sphalerite sparsely scattered in limestone. **Dev:** Open cuts, shaft. **Ref:** 158.

Hi Cliff

(see Uncle Sam under lead)

Highland (63)

(see under lead)

Hoodoo (122)

(see under silver)

Hubbard (23)

(see under lead)

Hunter

(see Jackson)

Indian

(see Eureka under gold)

Iron Mask (Treadwell) (3)

Loc: Sec. 25, (40-36E), just E. of the Mystery property. **Access:** Road. **Prop:** 2 unpatented claims. **Owner:** Andrew Abrahamson and Joe Bodbout, Orient, Wash. (1941). **Ore:** Zinc, lead, silver, gold, copper. **Ore min:** Pyrite, pyrrhotite, chalcopryrite. **Deposit:** Quartz vein said to av. 4 to 6 ft. in width and to be traceable for 3,000 ft. occurs in latite and limestone cut by granite dike. **Dev:** 100 ft. of work in 3 shafts, some open cuts. **Assays:** A selected sample assayed 28% Zn, 14% Pb, 7 oz. Ag. 0.08 oz. Au. **Ref:** 30, pp. 127-128. 164, p. 282.

Iroquois (Flannigan, Columbia) (57)

Loc: Secs. 19, 20, 29, and 30, (40-42E), just E. of Red Top Mtn., Northport dist. **Elev:** 2,600 ft. **Access:** 4 mi. road to Leadpoint. 12 mi. to railroad at Boundary. **Prop:** 17 unpatented claims and 40 acres deeded land. **Owner:** Mines Management, Inc., Spokane, Wash. (1948—). Iroquois Mining Co. (1918-1924). Willow Creek Mines, Inc. (1945). **Ore:** Zinc, lead, silver, gold. **Ore min:** Galena, sphalerite, pyrite, chalcopryrite, cerussite, smithsonite. **Deposit:** Ore occurs as replacements in a breccia zone 50 to 60 ft. wide in limestone 280 ft. from contact with argillite. Altered lamprophyre dikes are associated with the ore. **Dev:** 800-ft. crosscut, 5,089 ft. of diamond drill holes, several old workings, and a large glory hole. 1,900 ft. of drifts and a 351-ft. raise. **Improv:** New 20- by 48-ft. metal building (1949). **Assays:** Owner reported 640,000 tons of indicated ore in 1950 had an indicated av. of 3.02% Zn, 0.88% Pb. **Prod:** 1917, 1928, 2,898 tons in 1950 av. 3.3% Zn, 0.39% Pb, 0.1 lb. Cd, 0.025 oz. Ag per ton. **Ref:** 30, p. 108. 46, pp. 85-86. 73, pp. 102-104. 97, 1917, p. 506; 1928, p. 703. 98, 1920-1925. 108, 4/50. 110, 1/49, pp. 5-6. 112, p. 185. 133, p. 37. 158. 164, pp. 296-297.

Jackson (Hunter) (60)

Loc: SW¼NW¼ sec. 19, (40-42E), on W. side of Red Top Mtn., Northport dist. **Access:** 2 mi. from road. **Prop:** 1 unpatented claim. **Owner:** W. F. Stevens (1941). White City Silver Mines Co. (1928-1935). **Ore:** Zinc, silver, lead, copper. **Ore min:** Pyrite, chalcopryrite, sphalerite, galena. **Deposit:** Mineralized quartz vein in argillite 4 to 6 ft. in width. **Dev:** 350-ft. adit with 100-ft. raise, 3 upper adits, each about 175 ft. long. **Prod:** 1928, 1935. **Ref:** 30, p. 108. 97, 1928, p. 703; 1935, p. 355. 106, 9/17/28, p. 24. 158.

Jay Dee (107)

(see under silver)

Jay Gould (110)

(see under silver)

Joe Creek (95)

Loc: NW¼NW¼ sec. 4 and SW¼SW¼ sec. 5, (36-40E), Mill Cr. area. **Owner:** Joe Creek Mining Co., Colville, Wash. (1952—). **Ore:** Zinc, lead. **Ref:** 133, p. 35.

Jupiter

(see Last Chance under lead)

Just Time (62)

(see under lead)

Keough (64)

(see under lead)

Kettle River

(see Galena Hill under lead)

King Tut

(see under lead)

Krug (113)

(see under copper)

Lakeview

(see Roosevelt under silver)

Last Chance (34)

(see under lead)

Lead King (48)

(see under lead)

Little Frank (120)

(see under lead)

Lone Star (20)

(see under silver)

Longshot (94)

(see under lead)

Lucile (Owen, Boundary Silver Lead) (58)

Loc: Near center S. line SW¼ sec. 19, (40-42E), on Red Top Mtn., Northport dist. **Elev:** 3,550 ft. **Access:** 9 mi. by road to railroad at Boundary. **Prop:** 7 claims: Tip Top, Winner, Cabin, Lucile, Comet, Silver Tip, Effie. **Owner:** 20-yr. lease (1952-1972) by Pacific Northwest Mining Co., Bremerton, Wash., from Consolidated Speculator Corp., Spokane, Wash. (1948—). E. C. Owen (1910-1943). Leased to Boundary Silver Lead Co. (1926). **Ore:** Zinc, lead, silver, cadmium. **Ore min:** Galena, tetrahedrite, sphalerite, pyrite, scheelite, cerussite. **Gangue:** Quartz, calcite. **Deposit:** Irregular mineralized zones in marble associated with quartz veins and lamprophyre dikes. Ore body developed in 1948, 8 to 25 ft. wide est. to contain 11,000 tons of ore. The best showing of scheelite is in quartz stringers associated with the sulfides in a zone exposed for 50 ft. in a short drift at end of the 212-ft. adit. **Dev:** 212-ft. adit, from which several winzes and drifts have been driven. Another adit 75 ft. lower is 430 ft. long (1953). **Improv:** New ore bins, compressor house, cabin (1949). **Assays:** Zn concentrates reportedly high enough in Cd to pay freight and smelter charges. Weighted av. of 12 samples 1.5 to 8.0 ft. wide was 2.34% Pb, 8.7% Zn, 1.36 oz. Ag. 50 tons produced in 1926 contained 11% Zn, 19% to 32% Pb. Ore contains a trace of gallium. **Prod:** 50 tons 1926, 160 tons 1948, 44 tons 1949. **Ref:** 30, pp. 89-90. 37, pp. 61-62. 46, pp. 66-68. 73, pp. 100-102. 97, 1928, p. 703. 106, 9/17/28, p. 24. 110, 2/49, p. 3. 150, p. 30. 157. 158. 164, pp. 298-299.

Lucky Charlie (5)

(see under copper)

Lucky Stone (76)
(see under lead)

Magma (Easy Money, Eldorado) (88)

Loc: E½SW¼ sec. 28, (38-41E), Northport dist. **Elev:** 3,200 ft. **Access:** Poor truck road from highway along S. Fk. Deep Cr. 14 mi. from railroad at Ione. **Prop:** 25 unpatented claims. **Owner:** Otto Berglund (Magma Molybdenum Mines Co.), Colville, Wash. (1921-1943). Magma Mines & Metals Co. (1930). **Ore:** Zinc, lead, molybdenum, tungsten, copper, silver, gold. **Ore min:** Sphalerite, galena, pyrite, molybdenite, scheelite. **Gangue:** Garnet, epidote, calcite. **Deposit:** Contact-metamorphic replacement of limestone near its contact with granite. **Dev:** 610-ft. adit, 110-ft. shaft, and other workings total 1,800 ft. **Assays:** 5 tons handpicked galena av. 62% Pb. A composite of three 18-in. channel samples showed 0.3% Pb, 1.0% Zn, 0.11% WO₃, 0.22% Mo. **Prod:** 5 tons galena ore 1927. **Ref:** 30, p. 109. 37, p. 63. 46, p. 61. 97, 1930, p. 676. 104, 1/15/35, p. 25. 106, 11/3/32, p. 9. 157. 158.

Maki (44)
(see under lead)

Maple Leaf
(see Melrose under silver)

Melrose (52)
(see under silver)

Mexico
(see Queen under silver)

Michigan Boy (96)
(see under lead)

Middleport (Rinchaw) (93)

Loc: SE¼ sec. 12, (36-41E), Colville dist. **Elev:** 4,500 ft. **Access:** 3 mi. of dirt road to State Highway 6-A at Middleport. **Prop:** 2 patented and 6 unpatented claims. **Owner:** Ed Fisher, Addy, Wash. (1941). E. F. Hauck, lessee. A. G. Fisher, Anastasia Fisher, P. H. Daly, Daisy C. Lorenz (1920). **Ore:** Zinc, lead, copper, silver, gold. **Ore min:** Sphalerite, galena, tetrahedrite, chalcopryrite, pyrite. **Gangue:** Quartz, dolomite, chlorite. **Deposit:** Mineralized quartz vein in granite av. 6 to 24 in. wide. Vein said to have a length of 6,000 ft. **Dev:** 800-ft. lower adit, 60-ft. upper adit, 60-ft. winze from lower adit. The two levels are 100 ft. apart. **Assays:** Ore said to run 8% Pb, 8% to 32% Zn, 11.80 oz. Ag, 0.13 oz. Au. **Prod:** 1929, 1937-1939. 50 tons mined and 35 tons milled in 1939. **Ref:** 30, p. 51. 46, pp. 112-113. 97, 1929, 1938-1940. 158.

Mineral Hill
(see Aichan Bee under silver)

Moonlite
(see Morning under silver)

Morning (89)
(see under silver)

Mountain View (21)
(see under silver)

Mullen (112)
(see under lead)

Myeerah (66)
(see under lead)

Neglected (81)
(see under lead)

Nevada (114)
(see under lead)

New England (Stone) (31)

Loc: Sec. 26, (39-40E), on W. side of Deep Cr., adjoining Northport property. **Elev:** 1,900 ft. **Access:** 6 mi. by road from railroad at Northport. **Prop:** 5 unpatented claims. **Owner:** Knob Hill Mines, Inc. (1943). Northport Mining Co. (1919). Ben Stout and L. W. Cook (1921). Wm. Siegman and associates, lessees (1938). **Ore:** Zinc, lead. Cobalt has been reported also. **Ore min:** Sphalerite, galena. **Gangue:** Tremolite. **Deposit:** Ore occurs as a replacement in limestone along lines of bedding near its contact with granite. Mineralized zone is 40 ft. wide with strongest mineralization over 24-ft. width. **Dev:** 350-ft. adit, 2 open pits. **Assays:** A few hundred tons of ore exposed are est. to run 3% Zn. Ore contains traces of gallium and germanium. **Ref:** 22, p. 7. 30, p. 100. 46, pp. 78-79. 73, p. 106. 111, p. 10. 129, pp. 110-111. 158. 164, pp. 312-313.

Newland
(see Longshot under lead)

North Monitor (119)
(see under silver)

Northern Light (28)
(see under lead)

Northport
(see Deep Creek)

Northwest
Loc: Northport dist. **Owner:** Daroy Metals Co. (1945). **Ore:** Zinc. **Prod:** Several hundred tons of zinc carbonate in 1920, and 45 tons of ore in 1945. **Ref:** 97, 1920, p. 269; 1945, p. 488.

Oakshott (90)
(see under lead)

Occidental (32)
Loc: Sec. 26, (39-40E), Northport dist. **Access:** ½ mi. from road. **Prop:** 4 unpatented claims and 1 fraction. **Owner:** Archie Robertson, Northport, Wash. (1941). **Ore:** Zinc, lead. **Ore min:** Galena, sphalerite. **Deposit:** A 30-in. silicified fault zone has disseminated sphalerite exposed in shaft. Reportedly a contact zone between granite and limestone about 4 ft. wide and traceable for 3,000 ft. **Dev:** 450-ft. drift, 200-ft. drift, 75-ft. shaft, 25-ft. shaft, and considerable surface stripping. **Ref:** 30, p. 105. 158.

Old Dominion (98)
(see under silver)

O-Lo-Lim (128)
(see under copper)

Olympia (70)
(see under lead)

Orazada (127)
(see under silver)

Orchid (117)
(see under silver)

Orient Eureka
(see Eureka under gold)

Owen
(see Lucile)

Paragon
(see Melrose under silver)

Payne (111)
(see under copper)

Perry (1)
(see under lead)

Pioneer

(see Longshot under lead)

Plug (41)

Loc: Secs. 28 and 33, (39-41E), just W. of Farmer property. **Access:** 14 mi. by road from railroad at Northport. **Prop:** 160 acres of deeded land. **Owner:** Grandview Mines, Inc., Spokane, Wash. (1952—). **Mrs. Helen Johnson**, Northport, Wash. (1941-1945). **Ore:** Zinc, lead, silver. **Deposit:** Replacement zone in limestone near granite contact is about 12 ft. wide and has been traced on the surface for 1,000 ft. **Dev:** 15-ft. shaft, 130-ft. adit. **Assays:** Said to contain as much as 22% Zn, 2% Pb. Samples from unspecified widths show 0.1% to 0.2% Pb, 0.3% to 8.9% Zn. **Ref:** 30, p. 90. 46, p. 62. 157. 158.

Pomeroy (10)

Loc: SE¼ sec. 22, (40-37E), 1,500 ft. S. of Easter Sunday property, Orient dist. **Elev:** 3,550 ft. **Access:** 8 mi. E. of Rockcut on Easter Sunday Lk. Road. **Prop:** 2 unpatented claims: Copper Mask, Copper Glance. **Owner:** W. M. Hendrickson, Orient, Wash. (1949). Sulphide Mountain Mining & Milling Co. (1907-1918). R. Normberg, Orient, Wash. (1941). **Ore:** Zinc, lead, copper, antimony, silver, gold. **Ore min:** Mostly sphalerite, some pyrite, galena, chalcopryrite, boulangerite, bornite. **Deposit:** Quartz vein as much as 8 ft. wide in schistose diabase or related rock. **Dev:** Vertical shaft 220 ft. deep, 27-ft. shaft. **Assays:** Said to carry Ag. **Ref:** 7, p. 83. 30, p. 127. 33, 1907, p. 1056; 1908, p. 1279. 98, 1918, p. 137. 132, pp. 143-144. 164, pp. 278-279.

Providence (22)

(see under lead)

Providence (Deer Trail)

(see Deer Trail under silver)

Queen (124)

(see under silver)

Queen and Seal

(see Queen under silver)

Ranch View (59)

(see under lead)

Red Sheaf (75)

(see under gold)

Red Top (53)

(see under lead)

Redwood

(see Eagle under silver)

Rinchaw

(see Middleport)

Riverview (16)

(see under lead)

Robena

(see Young America)

Rockcut (4)

(see under lead)

Rocky Creek

(see Burrus)

Roosevelt (61)

(see under silver)

Royal

(see Big Chief under lead)

Royal Gold

(see Hubbard under lead)

Santa Rita

(see Cleveland under lead)

Saturday Night-Sunday Morning (125)

(see under lead)

Scandia (39)

Loc: NE¼ sec. 23, (39-40E), on W. side of Deep Cr. **Elev:** 2,469 ft., 600 ft. above Deep Cr. **Access:** 6 mi. by road from railroad at Northport. **Prop:** 5 claims: Scandia, Galena, Queen, Sunnyside, Triangle; and 70 acres of deeded land. **Owner:** John, Donald, Theodore, and Effie Nasburg and Raleigh Hallenius, Spokane, Wash. (1943—). **Ore:** Zinc, lead, silver, gold. **Ore min:** Sphalerite, a little galena. **Gangue:** Calcite. **Deposit:** Mineralized breccia zone in dolomite near slate contact. Evidence of mineralization over lateral distance of about 400 ft. **Dev:** 20-ft. shaft, 240-ft. drift, 100-ft. winze (1953). **Assays:** Several samples show from 5.74% to 39.19% Zn, 3.3% to 15.0% Pb, 0.6 to 1.0 oz. Ag, tr. Au. Ore in 100-ft winze runs 2% to 22% Zn (1953). One carload of ore in 1950 contained 8% Pb, 8.6% Zn. **Prod:** 1950, 1951. **Ref:** 133, p. 38. 157. 158.

Seal

(see Queen under silver)

Shoemaker (97)

Loc: SE¼ sec. 8, (36-40E), NE. of Colville. **Access:** About 10 mi. by road from railroad at Colville. **Prop:** 6 unpatented claims. **Owner:** Daroy Metals, Inc. (1944—). **Ore:** Zinc, silver. **Ore min:** Sphalerite, galena, pyrite. **Deposit:** 6-ft. mineralized zone underlying low-dipping thrust fault in brecciated dolomite. Ore minerals show only in the upper adit. **Dev:** 1,200 ft. of workings in 2 adits, 3 raises, 3 stopes, and numerous open cuts. **Assays:** 81 tons av. \$14 per ton. Ore remaining in sight in 1953 est. to av. 4% sphalerite. **Prod:** 1926; 81 tons shipped to Wallace, Idaho in 1941. **Ref:** 30, p. 52. 46, p. 48. 68, p. 8. 97, 1926, p. 469. 157. 158.

Short Wait (26)

(see under lead)

Sierra Zinc (Aladdin, Blue Ridge) (87)

Loc: Secs. 19, 20, 29, and 30, (38-41E), on W. side of Deep Cr. 4 mi. N. of Aladdin. **Elev:** 2,000 ft. **Access:** ½ mi. W. of the Aladdin-Deep Lk. highway by road. 17 mi. from railroad at Northport. **Prop:** 7 claims: Troublesome, Mistake, In Place, Original (or Skookum), Rite, Champion, Protect. **Owner:** Goldfield Consolidated Mines Co., San Francisco, Calif. (1949—). Aladdin Mining Co. (1908-1933). Blue Ridge Mining Co. (1910-1940). Sierra Zinc Co. (1940-1944). **Ore:** Zinc, lead, silver, gold. **Ore min:** Sphalerite, galena, chalcopryrite, pyrite, molybdenite, smithsonite. **Gangue:** Dolomite, limestone. **Deposit:** Present ore consists of sphalerite and galena disseminated in limestone. Also on the property are quartz veins which carry minor amounts of chalcopryrite, sphalerite, galena, pyrite, and molybdenite. The main ore body mined prior to 1944 measured 300 ft. along the strike, 200 ft. down dip, and 4 to 12 ft. thick. 3 smaller ore bodies were mined. The ore occurred in marble close to a low-dipping fault and/or an igneous sill. **Dev:** 6 adits total 8,450 ft. of workings and 470 ft. of shaft. Diamond drill holes. Principal workings are on 4 levels. The upper 2 levels are connected to the lower 2 by a 260-ft. 30° inclined shaft. **Improv:** 300-ton flotation mill (1954). **Assays:** A carload of conc. ran 6.7 oz. Ag, 0.14 oz. Au, 21.9% Zn, 11% Pb. 12,123 tons produced in 1942 av. 1.59% Pb, 7.36% Zn. Av. of 0.67% Pb, 5.43% Zn, 0.491 oz. Ag, 0.012 oz. Au per ton were recovered from 1941-1944 production. **Prod:** 1909, 1924, 1925, 1941-1944 (100,000 tons), 1950-1952. **Ref:** 30, pp. 109-110. 46, pp. 40-42. 63, p. 111. 73, pp. 109-111. 97, 1925, p. 561; 1926, p. 470. 98, 1922-1926. 106, 1/5/33. 108, 1/42,

p. 40; 3/43, pp. 23-25. 112, p. 164. 116, no. 2, 1908, p. 26. 133, p. 34. 158.

Silver Basin

(see Queen under silver)

Silver Crown (29)

(see under lead)

Silver Key

(see Big Chief under lead)

Silver Mountain

(see Daisy-Tempest under silver)

Silver Queen (Ark)

(see Ark under silver)

Silver Queen (Queen)

(see Queen under silver)

Silver Seal

(see Queen under silver)

Silver Trail (84)

(see under lead)

Smoky Bullion

(see A and C under copper)

Star

(see Just Time under lead)

Sterrett (18)

(see under lead)

Stockwell

(see Columbia Tungsten under tungsten)

Stone

(see New England)

Stonewall-Sunnyside (30)

(see under lead)

Sugar Loaf

(see Vanasse under silver)

Sunday Morning

(see Saturday Night-Sunday Morning under lead)

Sunnyside

(see Stonewall-Sunnyside under lead)

Sunset (17)

(see under lead)

Surprise

(see Uncle Sam under lead)

Tempest (103)

(see under silver)

Tenderfoot (Avondale-Dome)

(see Avondale-Dome under lead)

Tenderfoot (Big Chief)

(see Big Chief under lead)

Treadwell

(see Iron Mask)

Uncle Sam (82)

(see under lead)

United Treasure (65)

(see under silver)

Van Stone (85)

Loc: Pit: E½ sec. 33, (38-40E). Mill: SE¼ sec. 28, (38-40E), on headwaters of Onion Cr. **Elev:** 3,600 ft. at mill. **Access:** 11 mi. by road to railroad at Marble. **Prop:** 16 unpatented claims,

deeded land. **Owner:** American Smelting & Refining Co., Salt Lake City, Utah (1950—). Geo. Van Stone and Harry Maylor (1920-1926). Hecla Mining Co. (1926-1927). Van Stone Mining Co. (1930). Willow Creek Mines of Nevada, Inc. (1939-1950). **Ore:** Zinc, lead. **Ore min:** Sphalerite, galena, pyrrhotite, pyrite. **Gangue:** Jasperoid, tremolite. **Deposit:** Bedding replacement of dolomite in Metaline limestone well below top of the formation. Two ore bodies have been developed by diamond drilling, one of which is exposed in an open pit. The pit will ultimately be about 1,400 ft. long and 400 ft. wide. The S. ore body is one-fourth as large. The ore bodies are 400 to 1,600 ft. from granite contact. Mineralized zones are lensy. **Dev:** 40-ft. shaft, 200-ft. adit, 600-ft. adit, diamond drill holes. Production is from open pit. **Improv:** Camp buildings, 1,000-ton mill, and accessory buildings (1955). **Assays:** A shipment after removal of some zinc by hand-sorting gave 42% Pb, 8% Zn, 4.2 oz. Ag, 0.005 oz. Au. Comparatively large tonnage of ore indicated by drilling av. 1.15% Pb, 5.54% Zn. Mining ore expected to av. 4.0% combined Pb, Zn. **Prod:** 1930, 1937, 1942, 1952-1955. **Ref:** 30, pp. 110-111. 43, 4/53, pp. 72-76. 46, p. 65. 97, 1930, p. 676; 1938, p. 460; 1943. 106, 3/5/31, p. 19. 108, 4/53, pp. 26-31, 68-69. 133, p. 29. 158.

Vanasse (74)

(see under silver)

Venus

(see Deer Trail under silver)

Victory

(see Vanasse under silver)

Wall Street (27)

(see under copper)

Washington Black Rock

(see Black Rock)

Wells Fargo (116)

(see under antimony)

White Horse (13)

(see under copper)

Winslow (105)

(see under lead)

Young (43)

(see under lead)

Young America (Robena) (71)

Loc: SW¼ sec. 28 and NE¼NW¼ sec. 33, (38-38E), about 500 ft. above Roosevelt Lk., Northport dist. **Elev:** 1,600 to 1,700 ft. **Access:** ¼ mi. NE. of Bossburg by road. **Prop:** 4 unpatented claims: Comet Silver, Mt. Vernon, Potomac, Silver Star. **Owner:** E. B. Gibbs and I. M. Hunley, Colville, Wash., operators (1951—). Optioned by Young America Mines, Inc., Seattle, Wash. (1951—), from Walter Morris and Perry Leighton, Colville, Wash. Young America Cliff Consolidated Mining Co. (1897-1905). Robena Silver Lead Co. (1907-1915). Bossburg-Yakima Co. (1923). Young America Mining Co. (1924-1930). Cuprite Mining Co. (1924-1943). **Ore:** Zinc, lead, silver, gold, copper. **Ore min:** Sphalerite, galena, pyrite, smithsonite, geocronite, cerussite, cervantite, stannite. **Gangue:** Quartz, calcite, siderite. **Deposit:** Irregular stringers and lenses of high-grade ore and disseminated ore in dolomite. One low-grade disseminated deposit occupies a zone 30 to 150 ft. wide and has been traced by diamond drilling for 900 ft. in length. **Dev:** 6 adits with considerable stoping between them total about 1,500 ft. **Improv:** 60-ton flotation mill (1952). **Assays:** Shipping ore av. 7% Pb, 7.7% Zn, 16.1 oz. Ag. Conc. from ore from one stope showed 3% Sb. A sample of geocronite showed 0.02% Sn, 58 oz. Ag. Pb:Zn ratio av. 1:2. One 5-ft. face shows

27.8% Pb, 9.6% Zn, 113 oz. Ag (1952). As much as \$3.00 Au has also been shown. **Prod:** A few carloads prior to 1890, 1922-1923, 1938, 1941, 1947-1954. 3 tons Pb conc. and 15 tons Zn conc. in 1950. 20 tons Pb conc. and 35 tons Zn conc. in 1951. **Ref:** 7, pp. 62-63. 12, pp. 26, 75-76. 13, p. 121. 22, p. 5. 30, pp. 82-83. 63, p. 112. 66, 73, pp. 117-118. 97, 1905, 1907, 1908, 1912, 1917, 1922-1924, 1928, 1930. 98, 1922-1926. 129, pp. 119-121. 132, pp. 148-153. 133, p. 31. 141, pp. 21, 22. 158. 164, p. 176.

WHATCOM COUNTY

Allen Basin (6)
(see under gold)

Azurite (11)
(see under gold)

Baltimore (7)
(see under gold)

Chain Lakes (4)

Loc: NW $\frac{1}{4}$ sec. 24, (39-8E), at Chain Lakes. **Access:** 2 mi. by trail from end of Mt. Baker road. **Prop:** 3 claims. **Owner:** S. H. P. Vevelstad, Seattle, Wash. (1952—). H. E. Barnes, Bellingham, Wash. (1934). **Ore:** Zinc, silver, copper, gold. **Ore min:** Sphalerite, chalcopryrite, pyrite, bornite. **Gangue:** Volcanic rock and limestone. **Deposit:** Sulfides disseminated in brecciated volcanic rock, limestone, greenstone, and schist. **Dev:** 2 adits and several open cuts. **Assays:** Picked sample showed 47.8% Zn, 11.3% Fe, 1.6 oz. Ag. **Ref:** 158.

Chancellor (8)
(see under gold)

Evergreen (2)
(see under gold)

Galena
(see Verona under gold)

Gargett (1)
(see under gold)

Gold Hill (12)
(see under silver)

Golden Arrow
(see Tacoma under gold)

Great Excelsior (3)
(see under gold)

Indiana
(see Chancellor under gold)

Lincoln
(see Great Excelsior under gold)

Mammoth (9)
(see under gold)

Northern Cascade
(see Gold Hill under silver)

Peterson
(see Gold Hill under silver)

President
(see Great Excelsior under gold)

Tacoma (10)
(see under gold)

Verona (5)
(see under gold)

YAKIMA COUNTY

Black Jack (Green, Deep Creek) (4)

Loc: Sec. 36, (15-11E), on NW. side of Deep Cr. trail about 100 yd. N. of Little Twin Sisters Lk. **Access:** Trail. **Prop:** 17 claims. **Ore:** Zinc, copper. **Ore min:** Sphalerite, chalcopryrite, pyrite, bornite, chalcocite, galena. **Gangue:** Quartz, calcite. **Deposit:** 3 parallel mineralized stringers from 1 to 3 in. wide separated from one another by 12 in. of country rock. Country rock consists of thin-bedded sandstone, conglomerate, and mudstone. **Dev:** Inclined shaft at least 50 ft. deep, open cuts. **Assays:** Said to assay 20% to 30% Zn where exposed in Deep Cr. Extensions are of much lower grade but said to be of mining grade. **Ref:** 58, p. 7. 158.

Chinook (2)
(see under copper)

Deep Creek
(see Black Jack)

Gold Hill (1)
(see under gold)

Green
(see Black Jack)

Richmond (3)
(see under lead)

ZIRCONIUM

Properties—Because zirconium metal is difficult to prepare in a state of high purity, there is much confusion concerning its physical and chemical properties, many of the earlier data having been determined from impure metal. In the sponge form it is a bluish-black powder, but the fused metal is steel gray to lustrous silver white, resembling freshly broken cast iron. In many respects it resembles titanium, and also it is similar to hafnium. It is moderately hard, ductile, malleable, and strong. Zirconium is one of the most corrosion resistant of metals, resisting most acids, even when concentrated and hot, as well as hot concentrated caustic solutions. The metal is about five-sixths as heavy as iron, and its tensile properties are similar to those of mild steel. At high temperatures it has a great affinity for gases such as oxygen, nitrogen, hydrogen, and carbon dioxide. Unlike most

metals, it has a very low absorption for neutrons and therefore does not slow down atomic fission. Other properties are shown in the table on page 12.

Uses—The current chief use of zirconium metal is in atomic-power devices, where it is employed as a structural material. It has also been used as a "getter" in the production of electronic tubes, for lamp filaments, as a deoxidizer and scavenger in steel manufacture, in ammunition primers, blasting caps, rayon spinnerets, electrodes, photo-flash bulbs, flares, and welding rods for spot welding. It has proven useful in surgery for suture wires, bone pins, and plates, as tissue grows directly to it without deterioration. Zirconium is alloyed with iron and with nickel to increase their hardness, with tungsten to increase its ductility, with copper to increase its strength, and with aluminum and magnesium to improve certain of their